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GB 2212183 A EP 0075509 A1 WO 88/02052 A1

(58) Field of Search
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INT CL[6] E04B , E04D

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(54) A conservatory roof

(57) A conservatory roof (2) comprises a framework of aluminium pre-formed inter-connecting parts connectible in different configurations to provide different shapes.

A ridge arrangement adaptable for glass or plastics roof sheeting, and for possible variations in pitch is shown in Fig. 4, with channel-section ridge members (62) arrangeable in slots (60) to give different pitches, and seals (58) being changeable to ones of different size to accommodate different sheeting.

A valley gutter (142) (Fig. 30) has pivotable wing members (176) to provide adjustability for pitch.

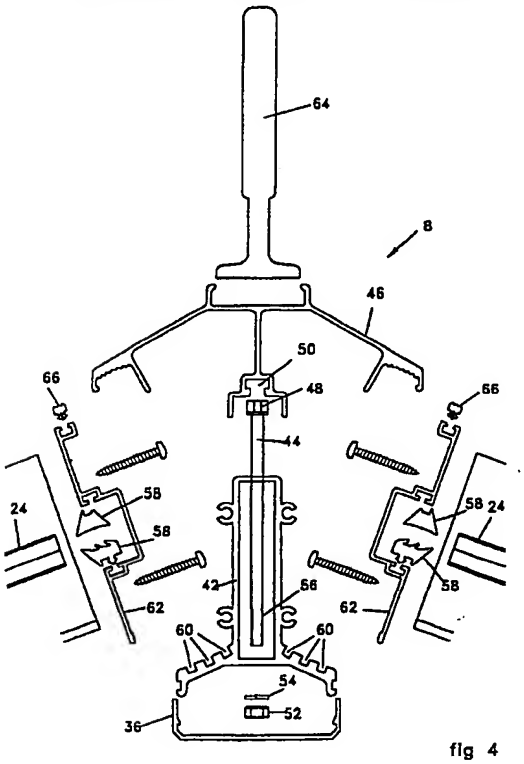

fig 4

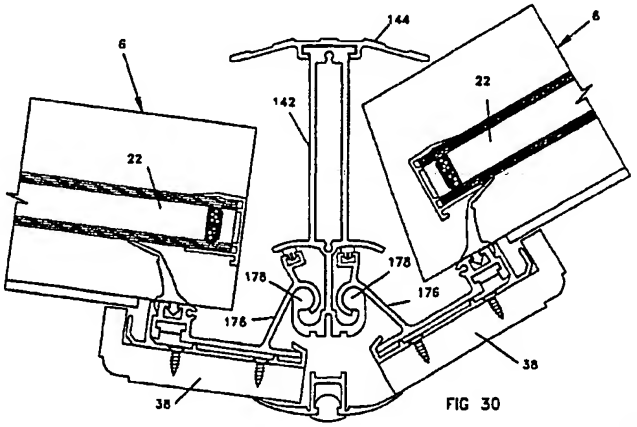

FIG 30

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

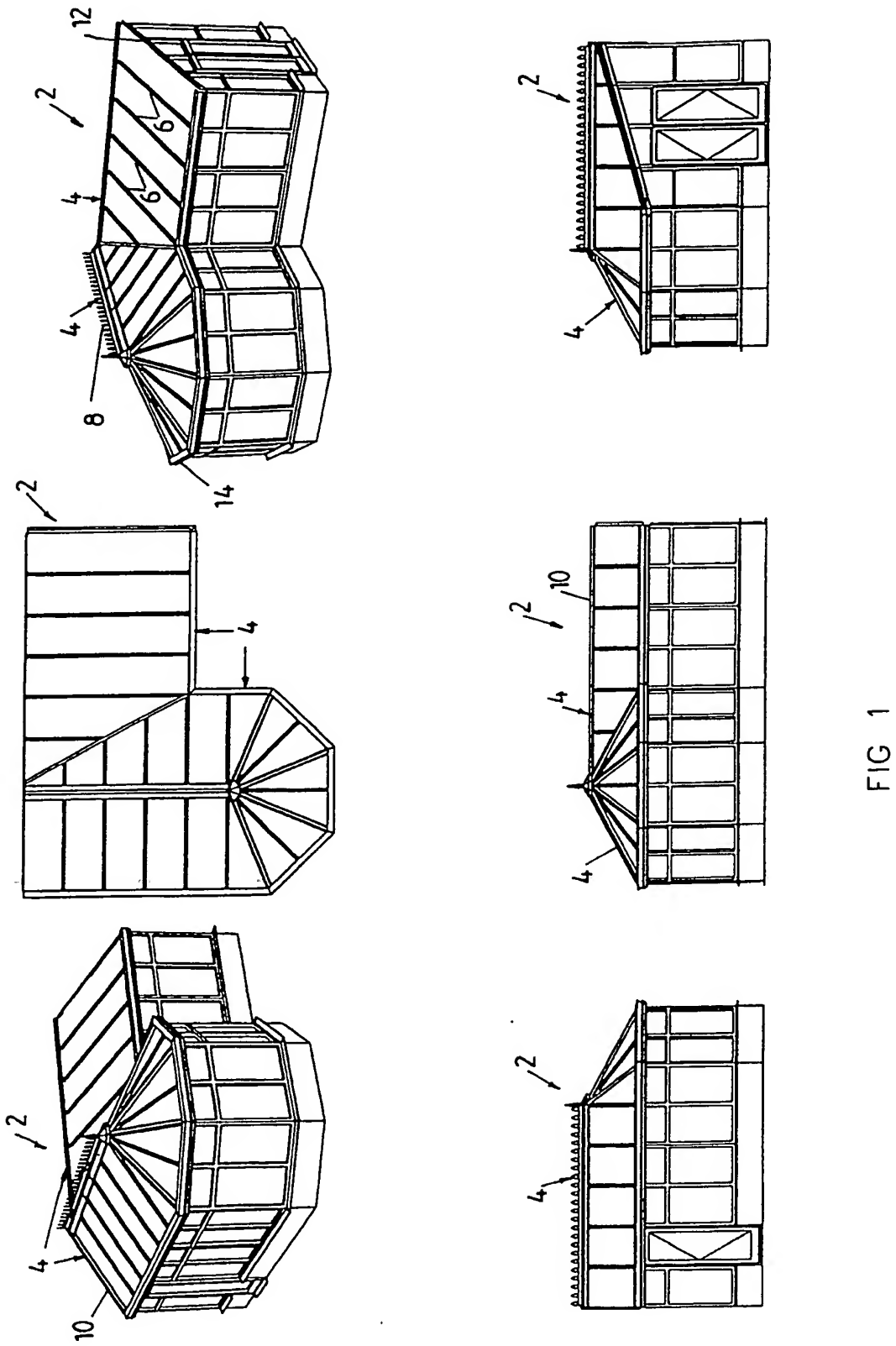

FIG 1

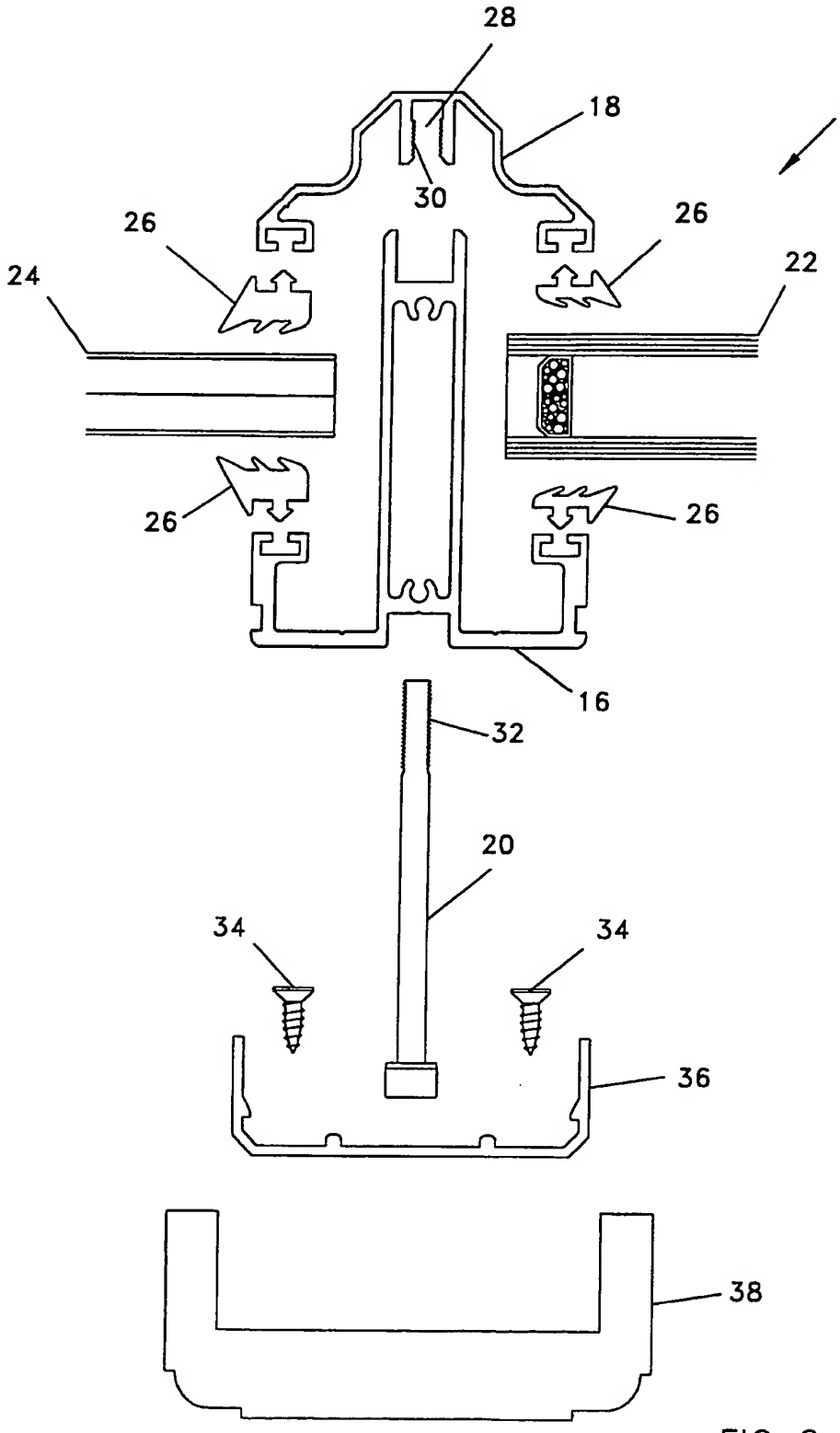

FIG 2

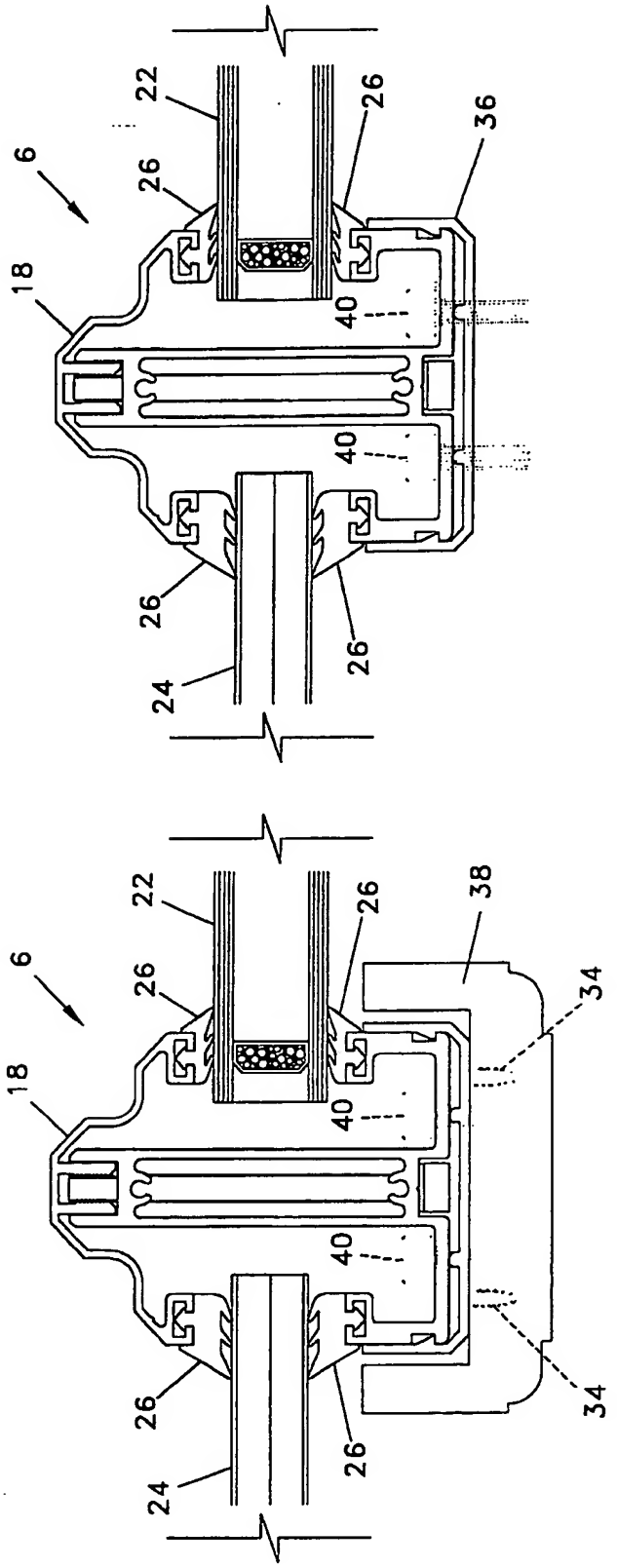

FIG 3

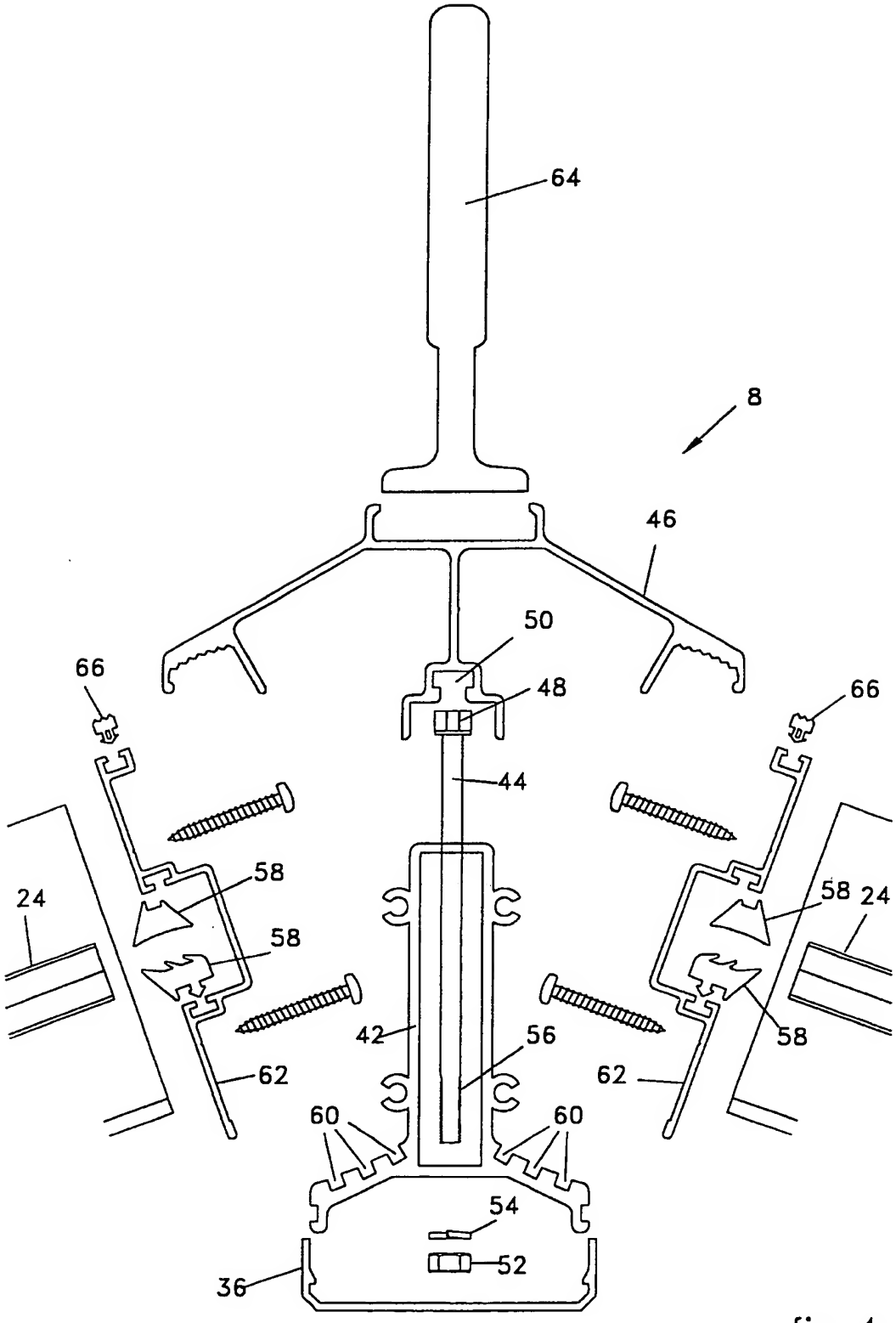

fig 4

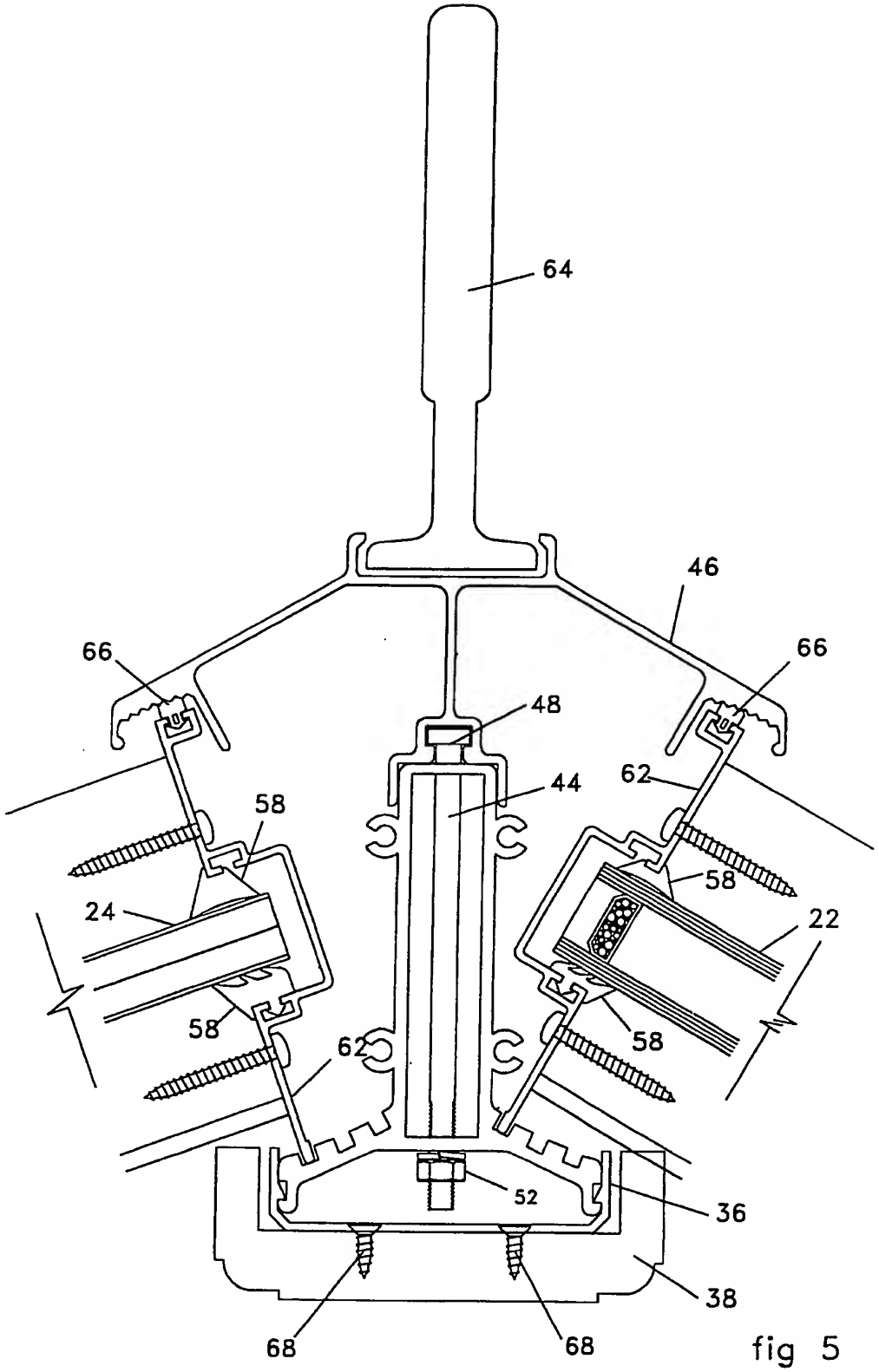

fig 5

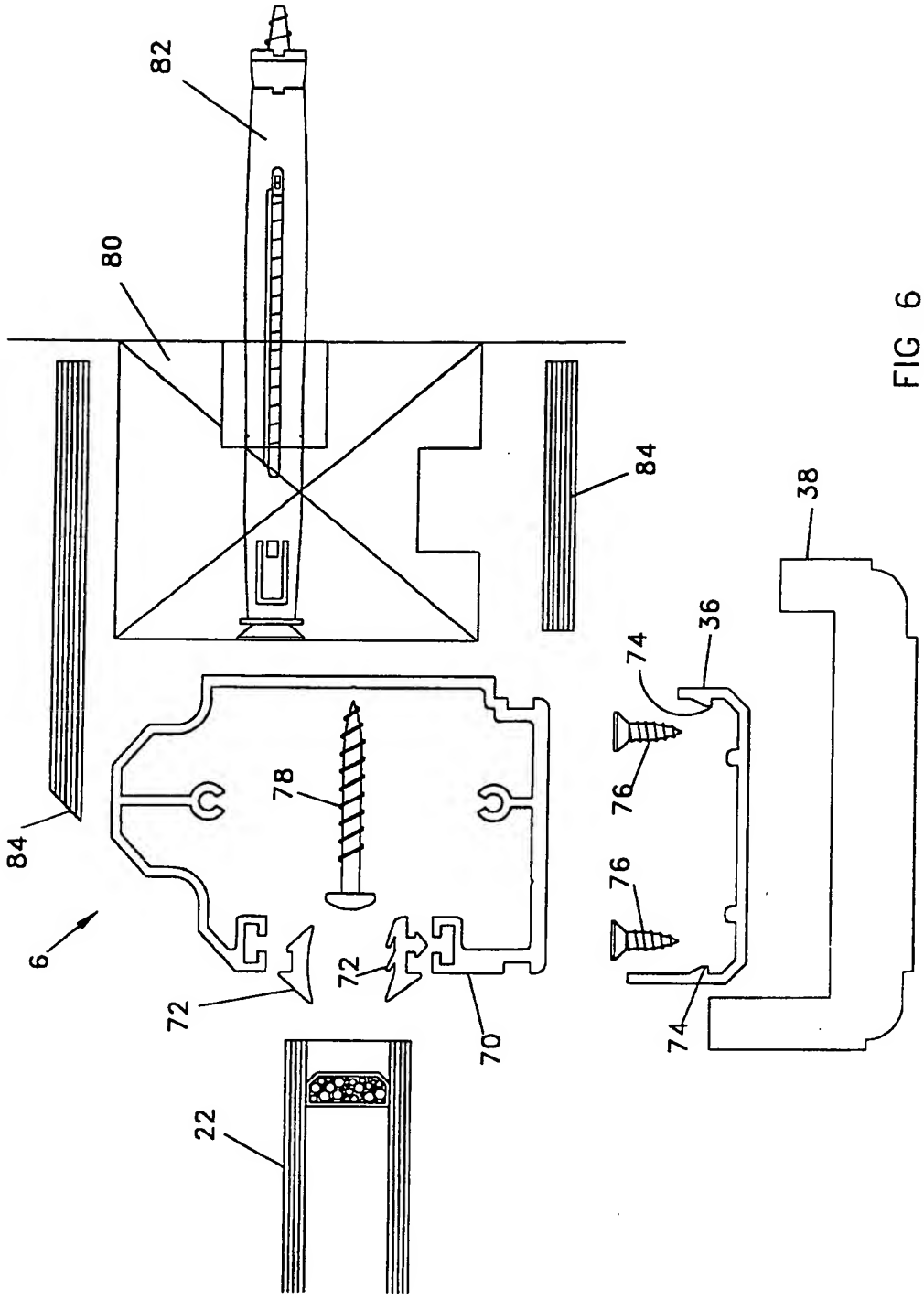

FIG 6

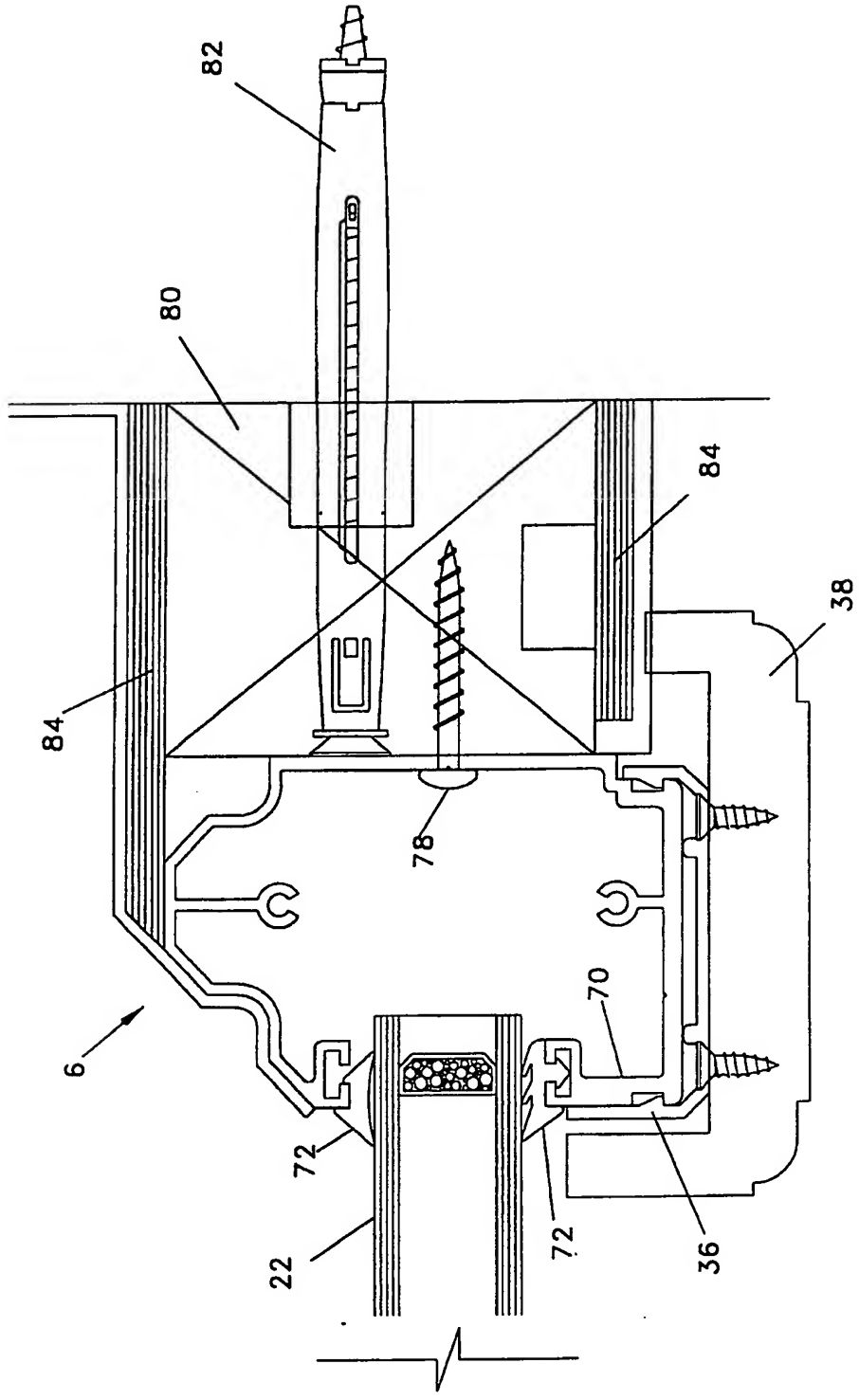

FIG 7

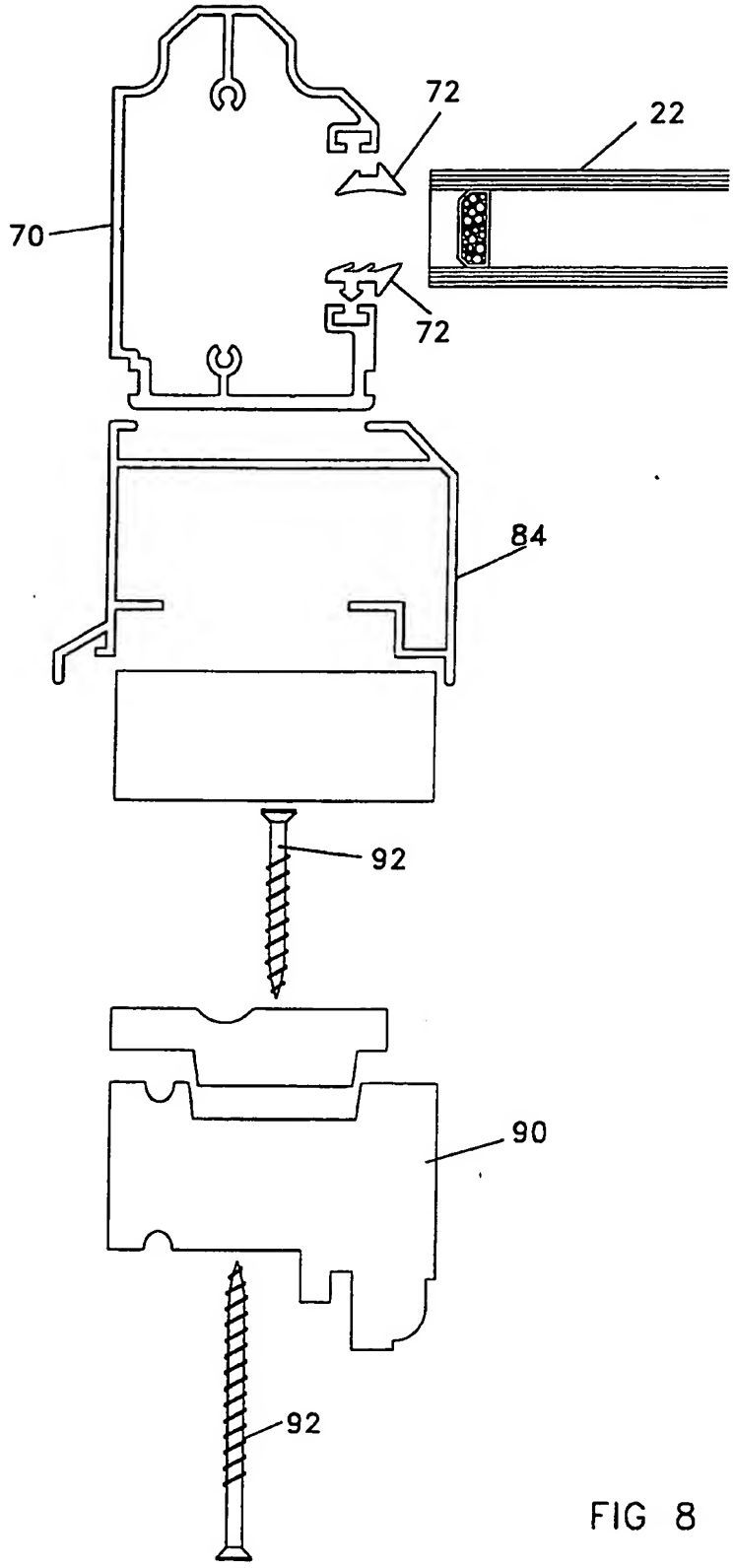

FIG 8

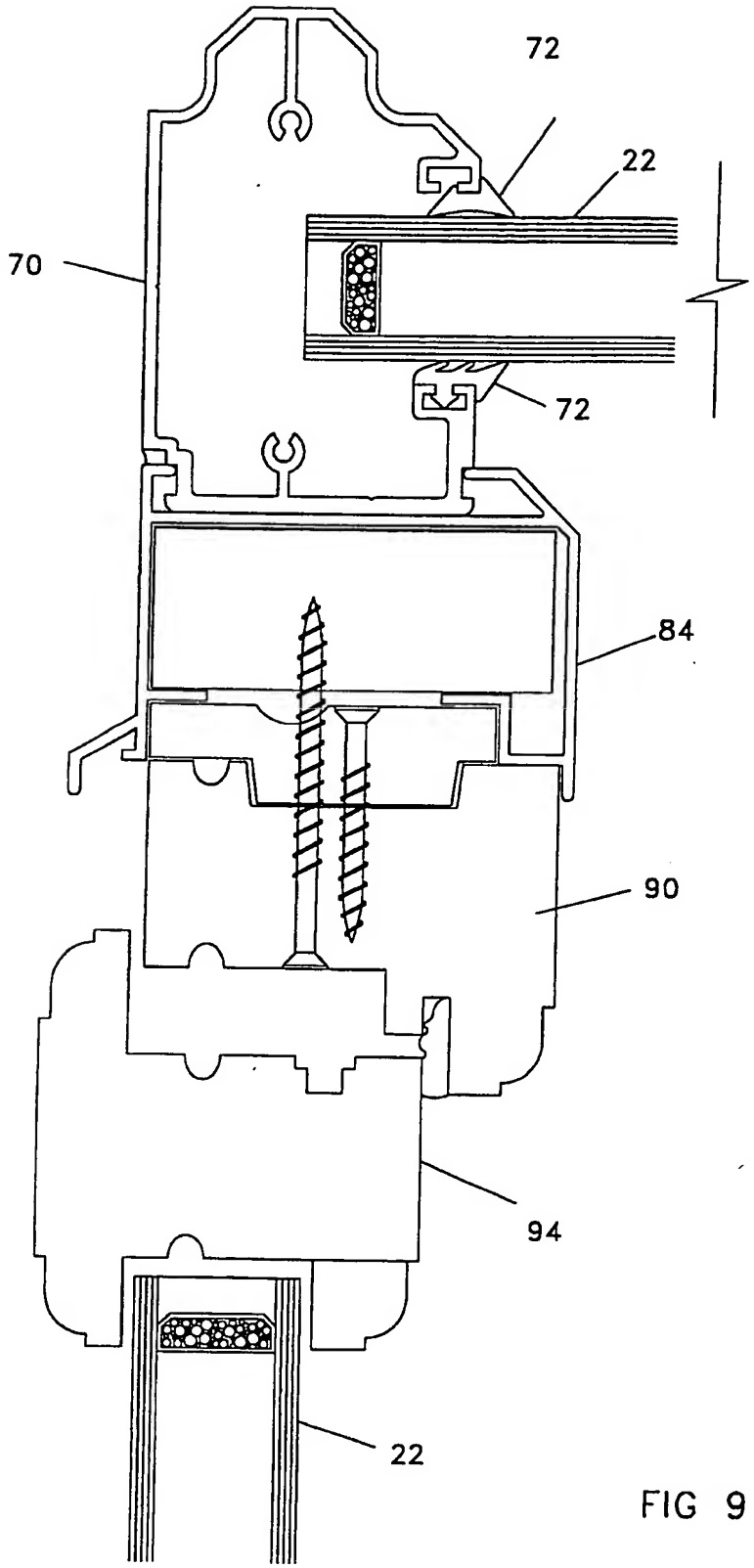

FIG 9

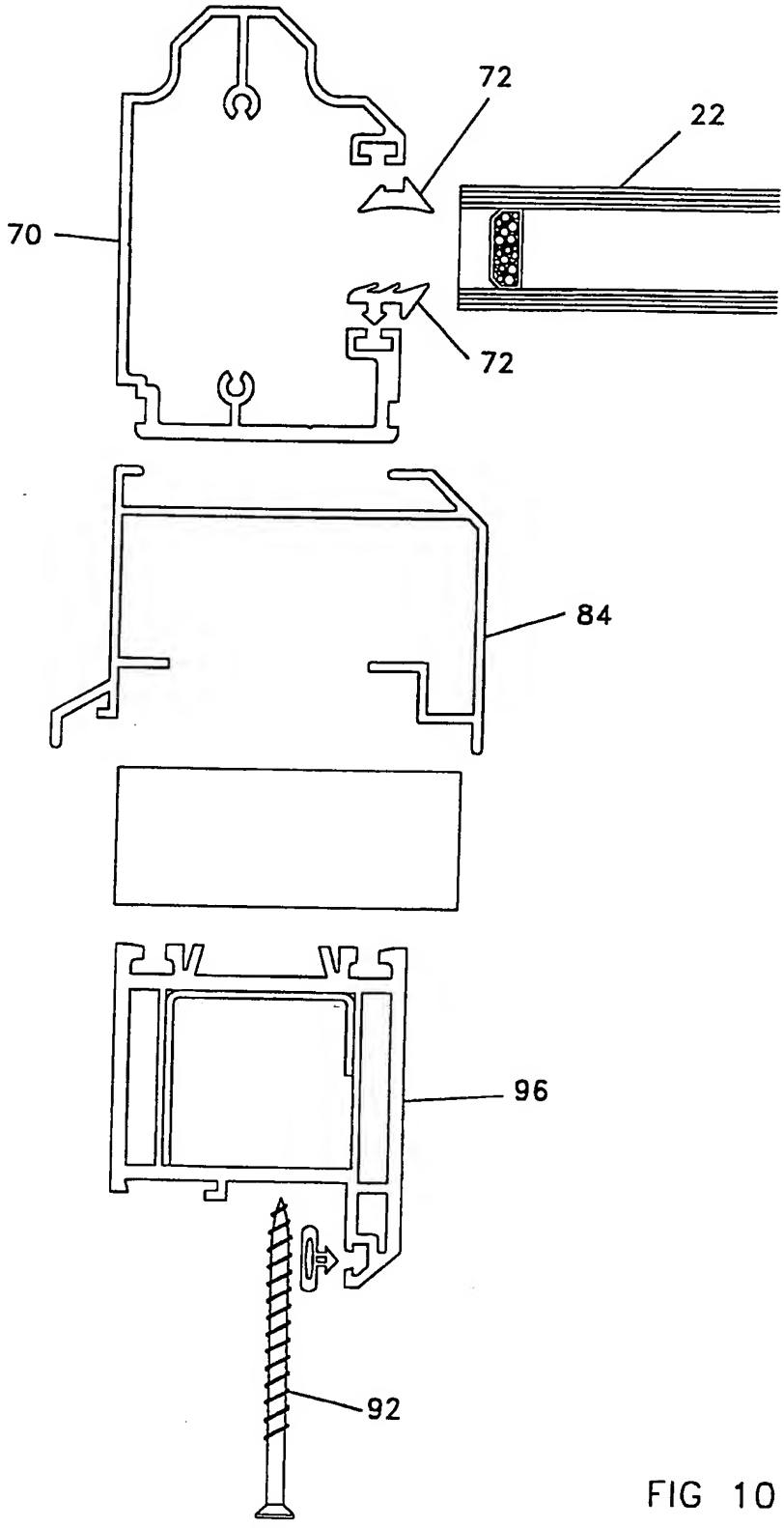

FIG 10

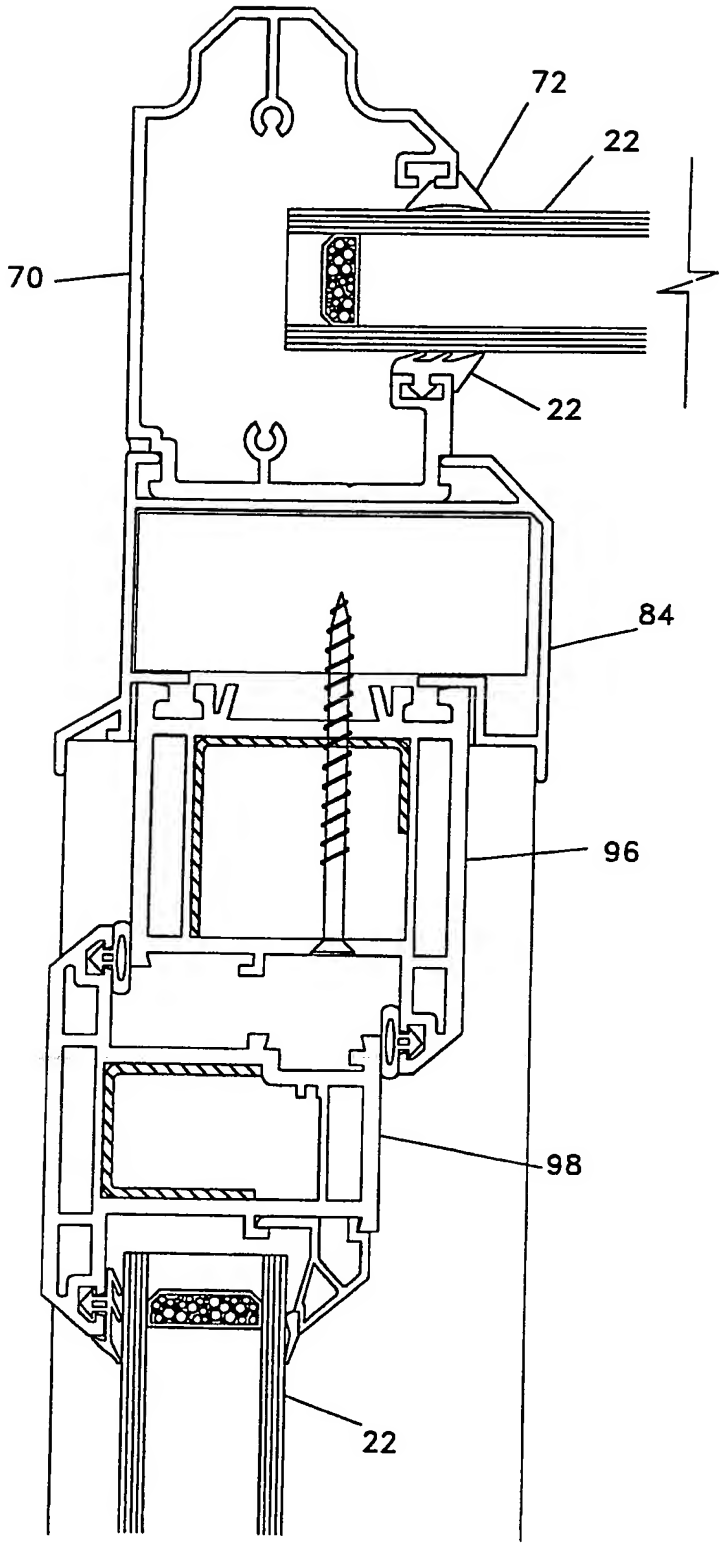

FIG 11

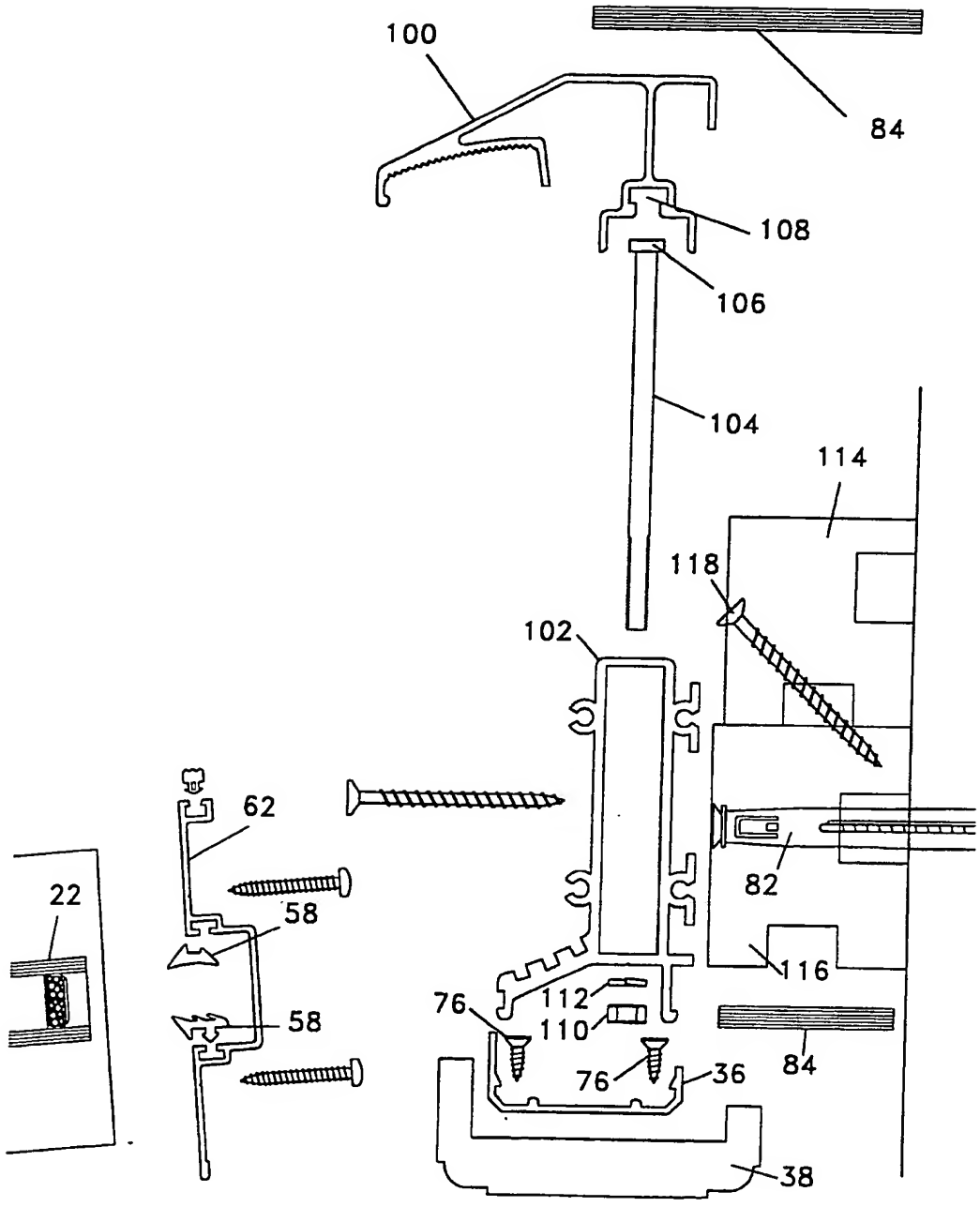
100
84
108
106
104
114
118
102
62
58
58
22
82
116
76
112
110
76
36
84
38

FIG 12

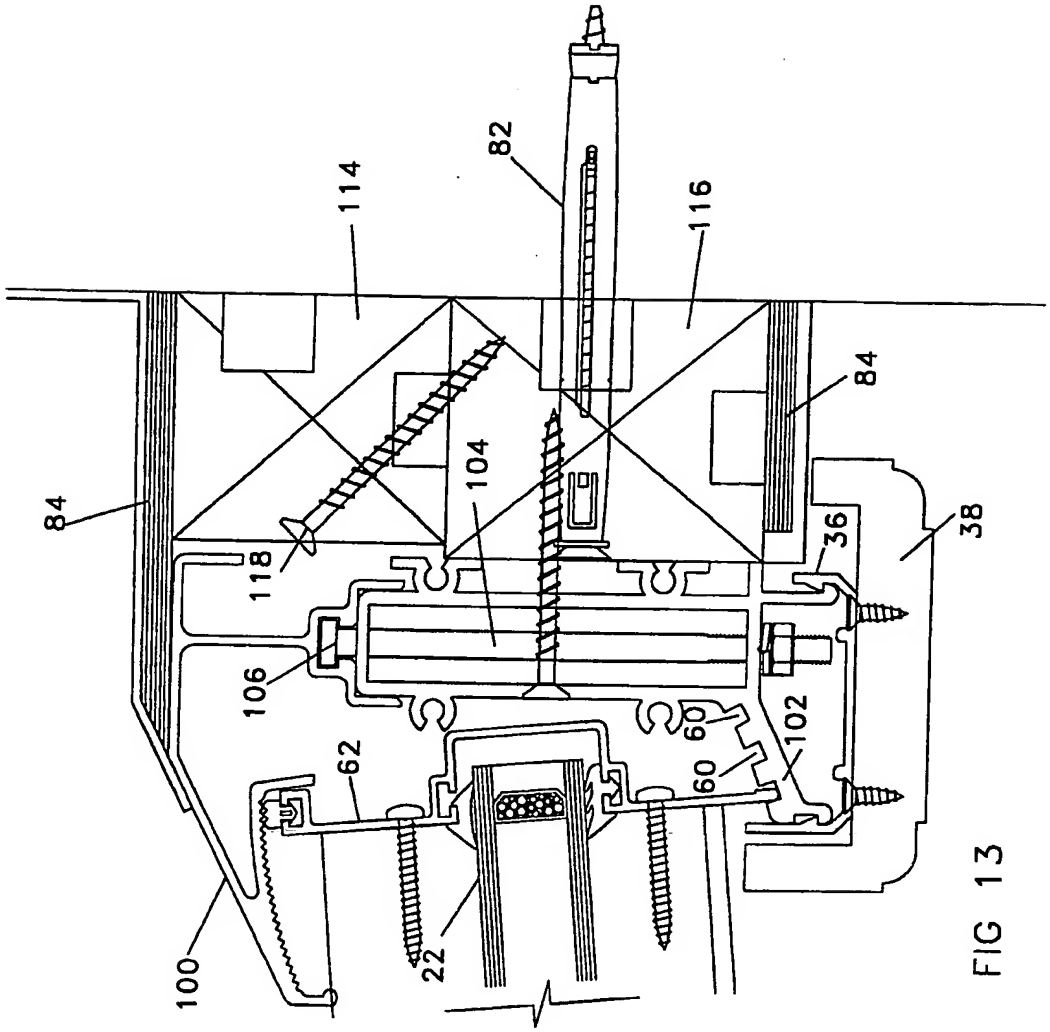

FIG 13

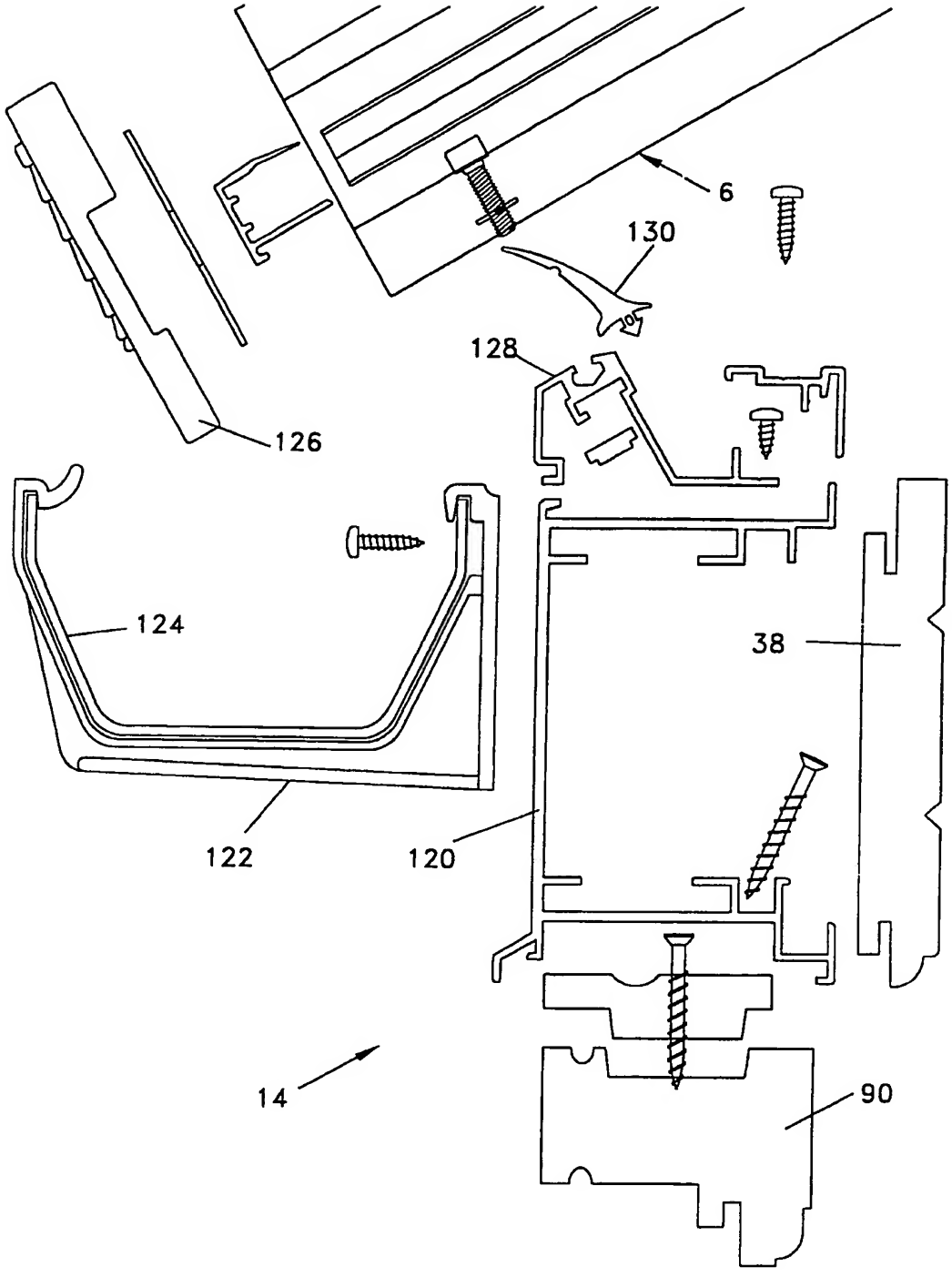

FIG 14

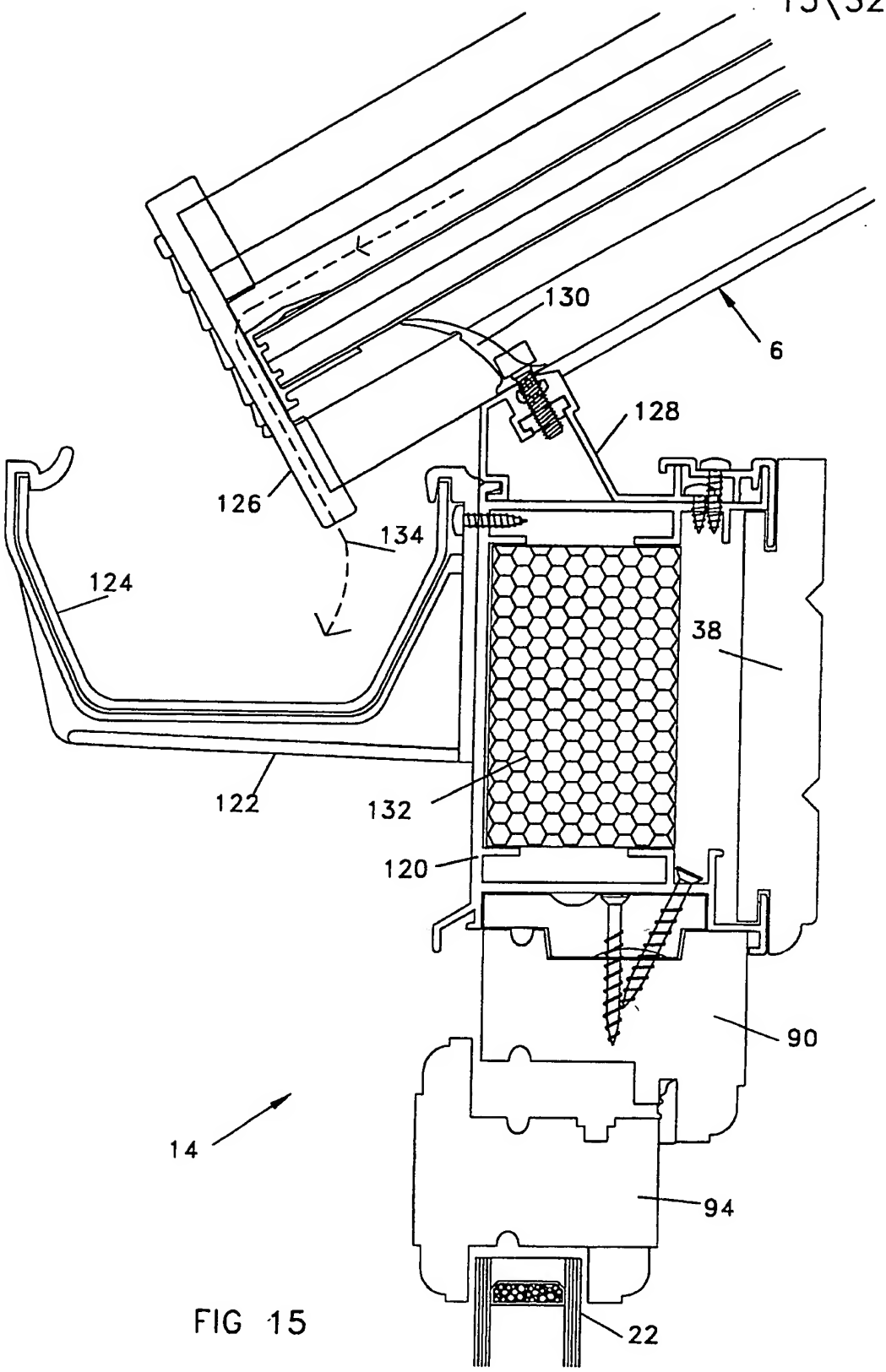

FIG 15

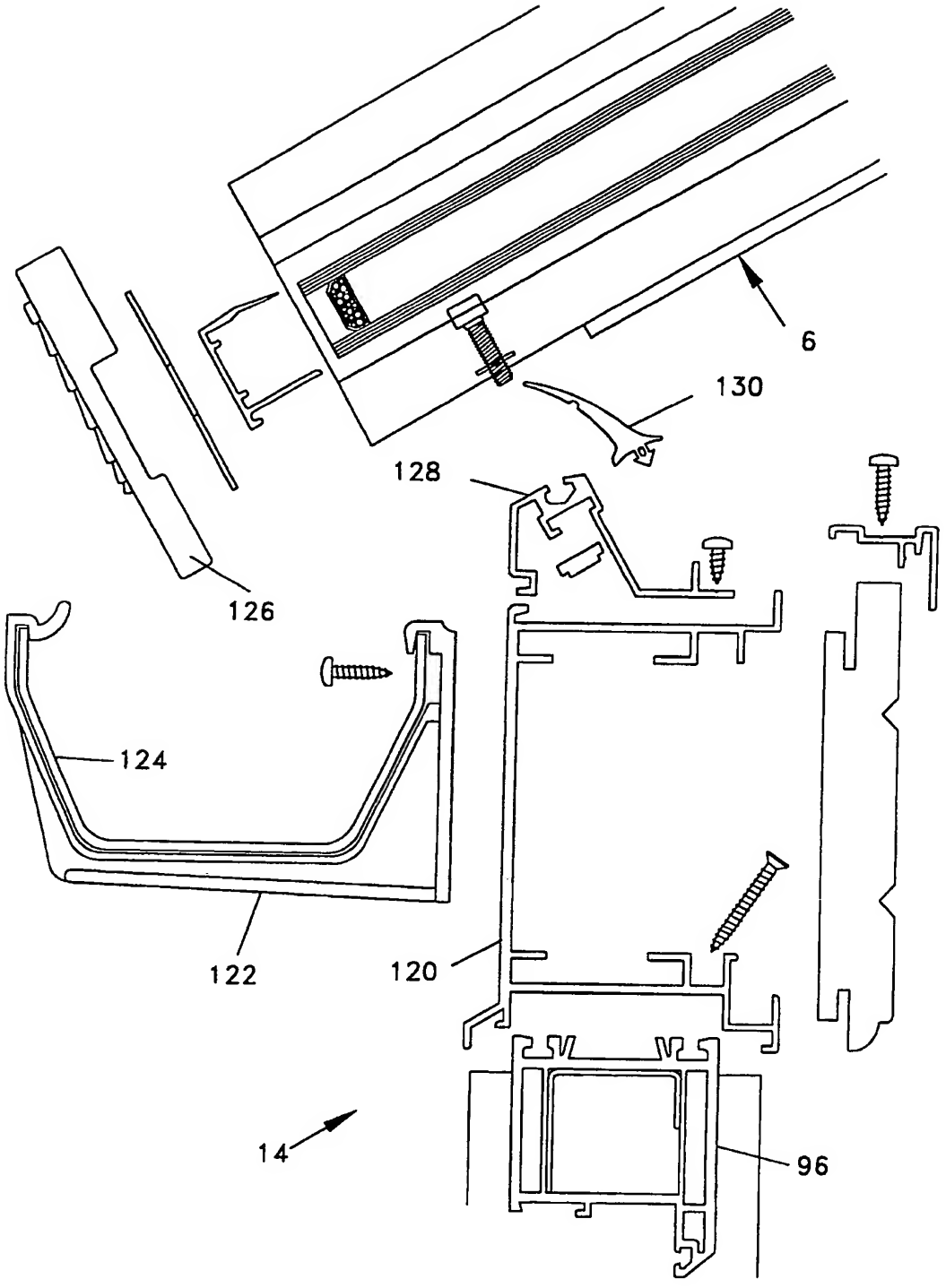

FIG 16

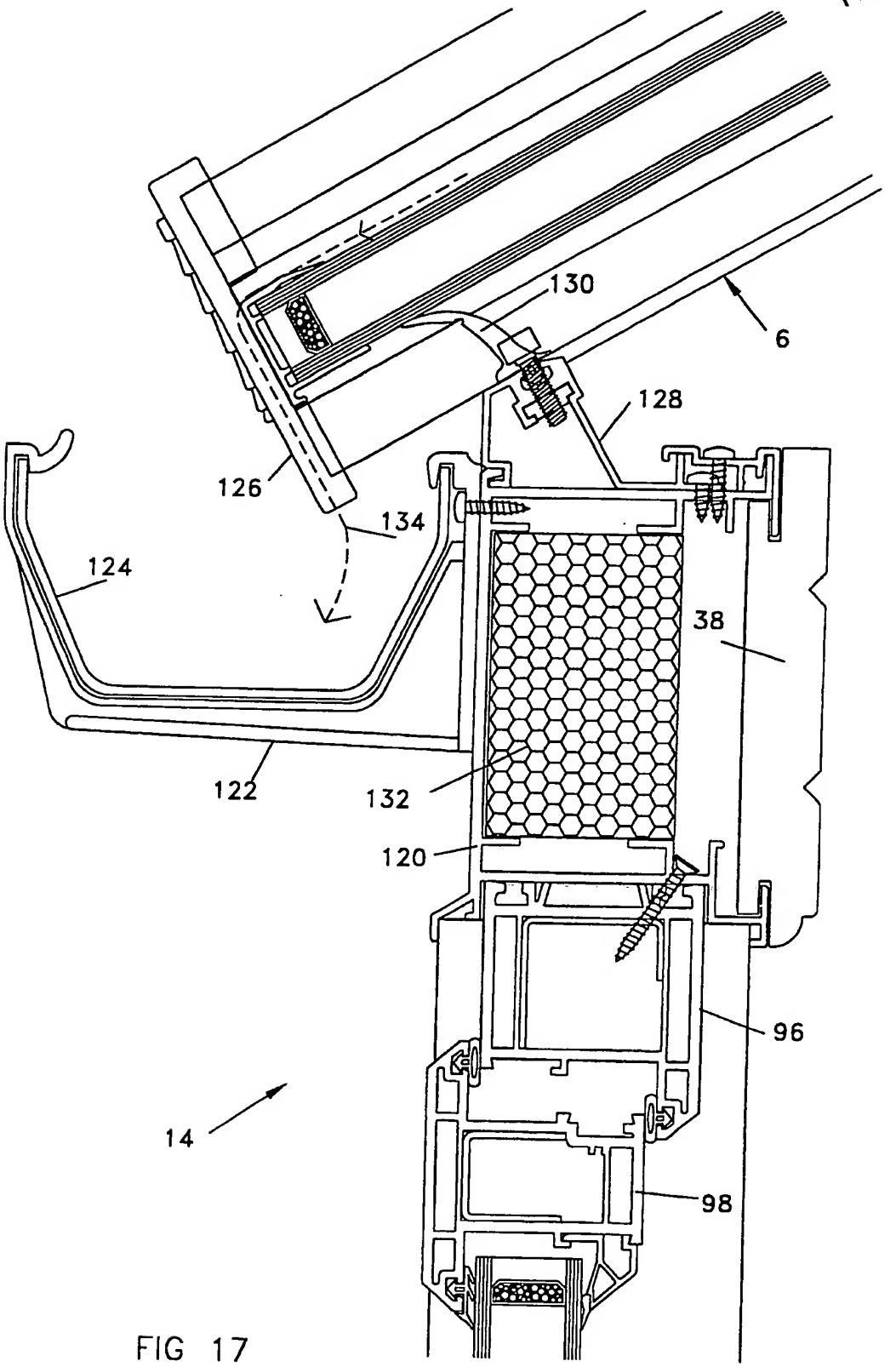

FIG 17

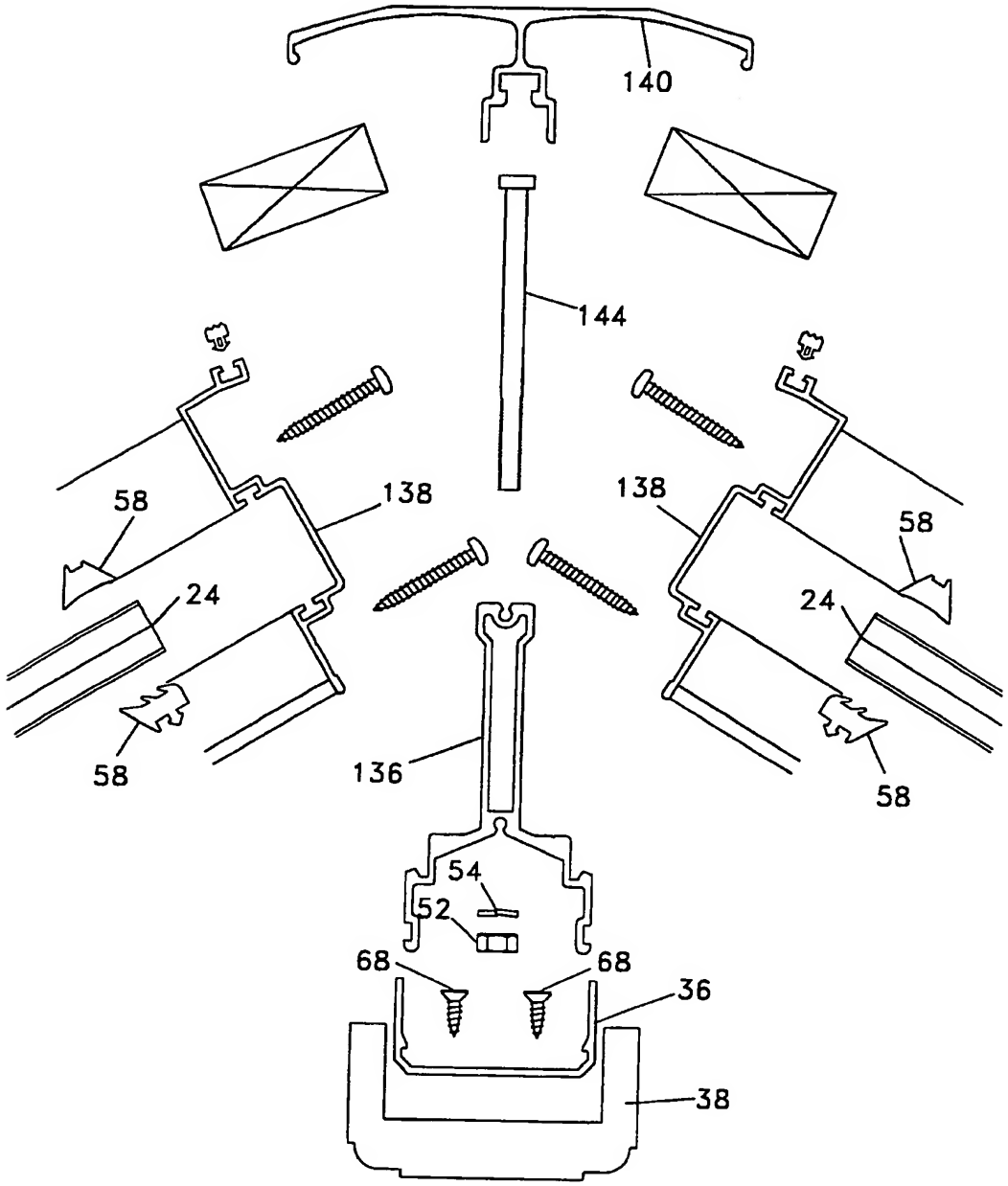

FIG 18

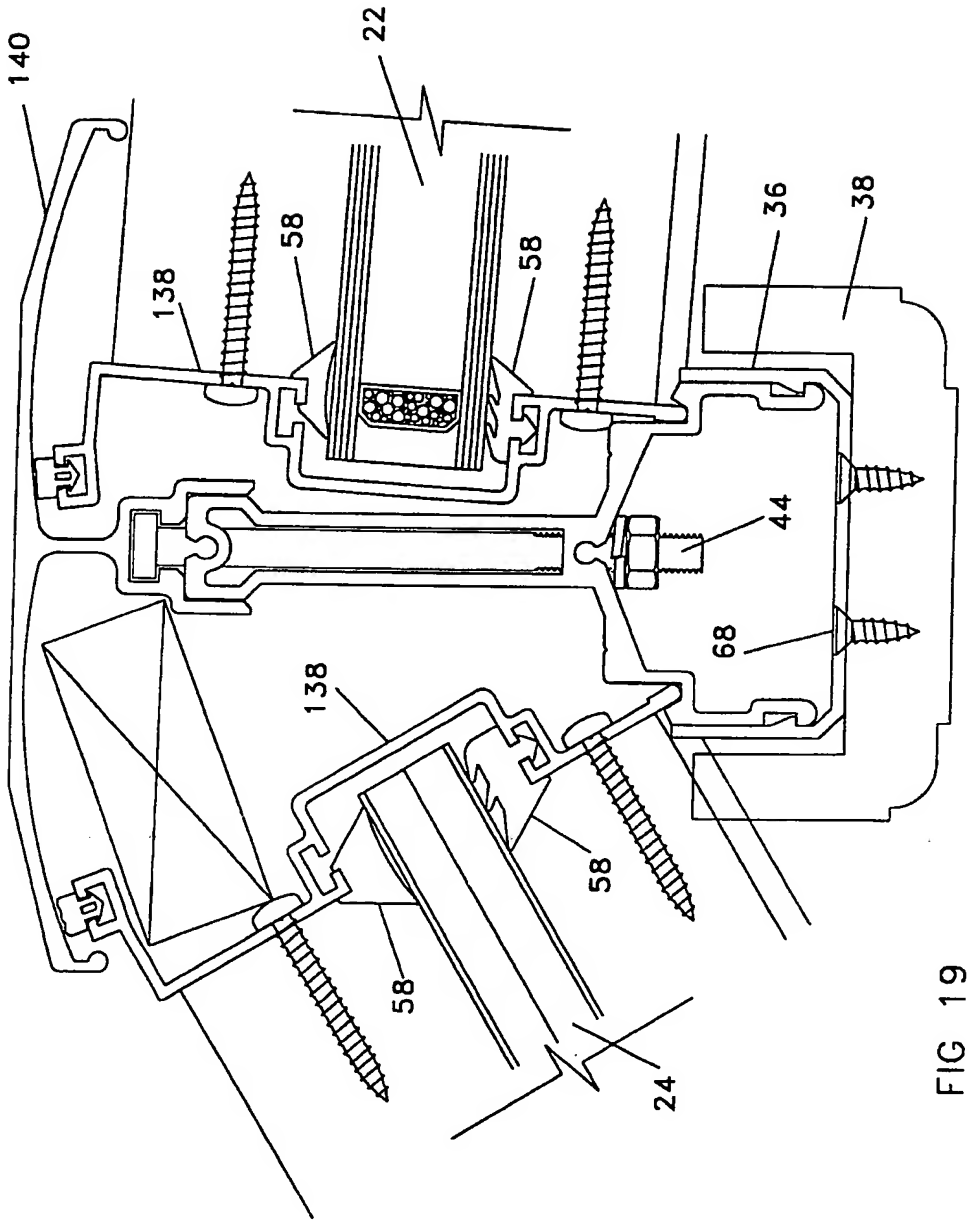

FIG 19

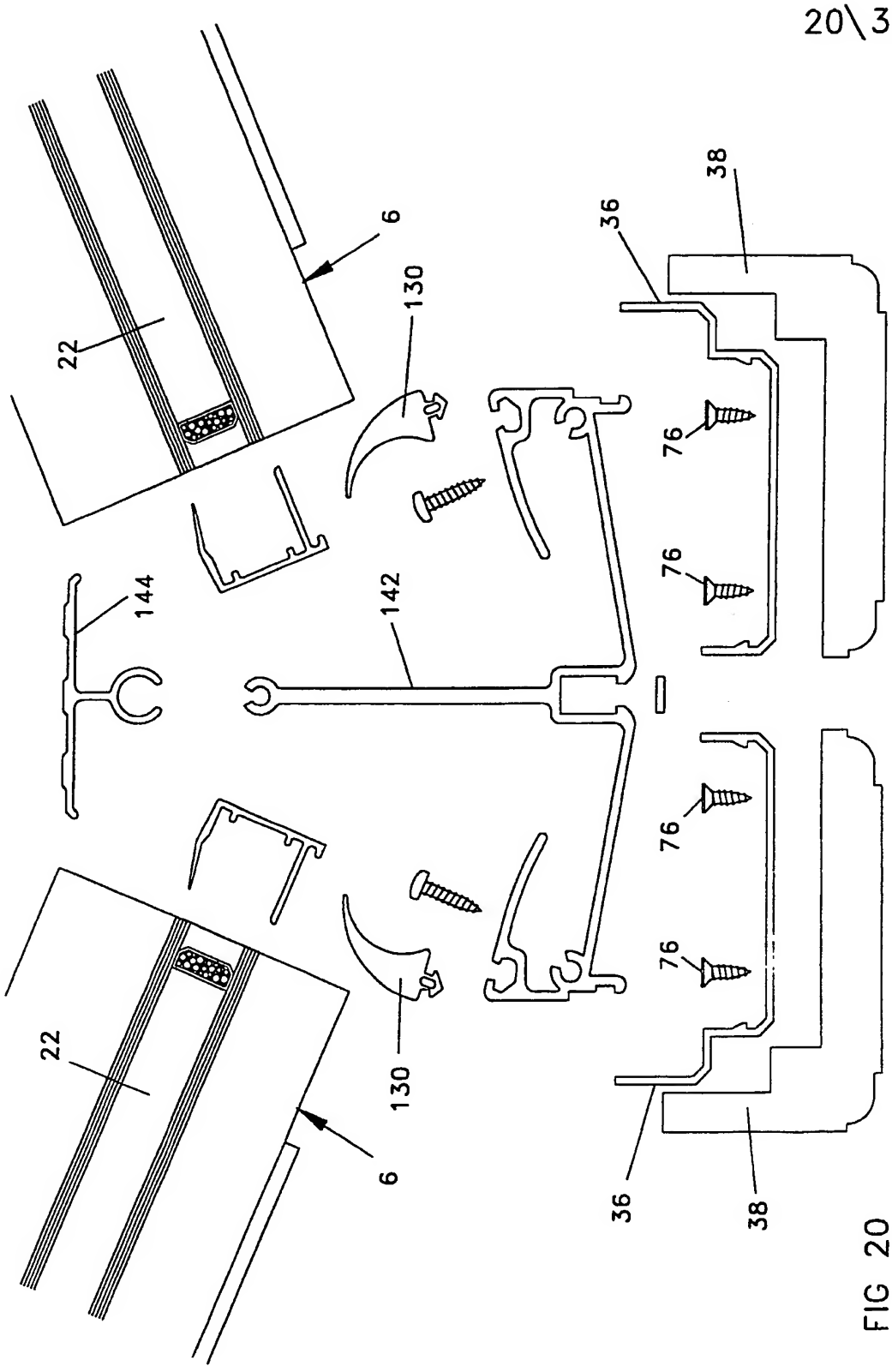

FIG 20

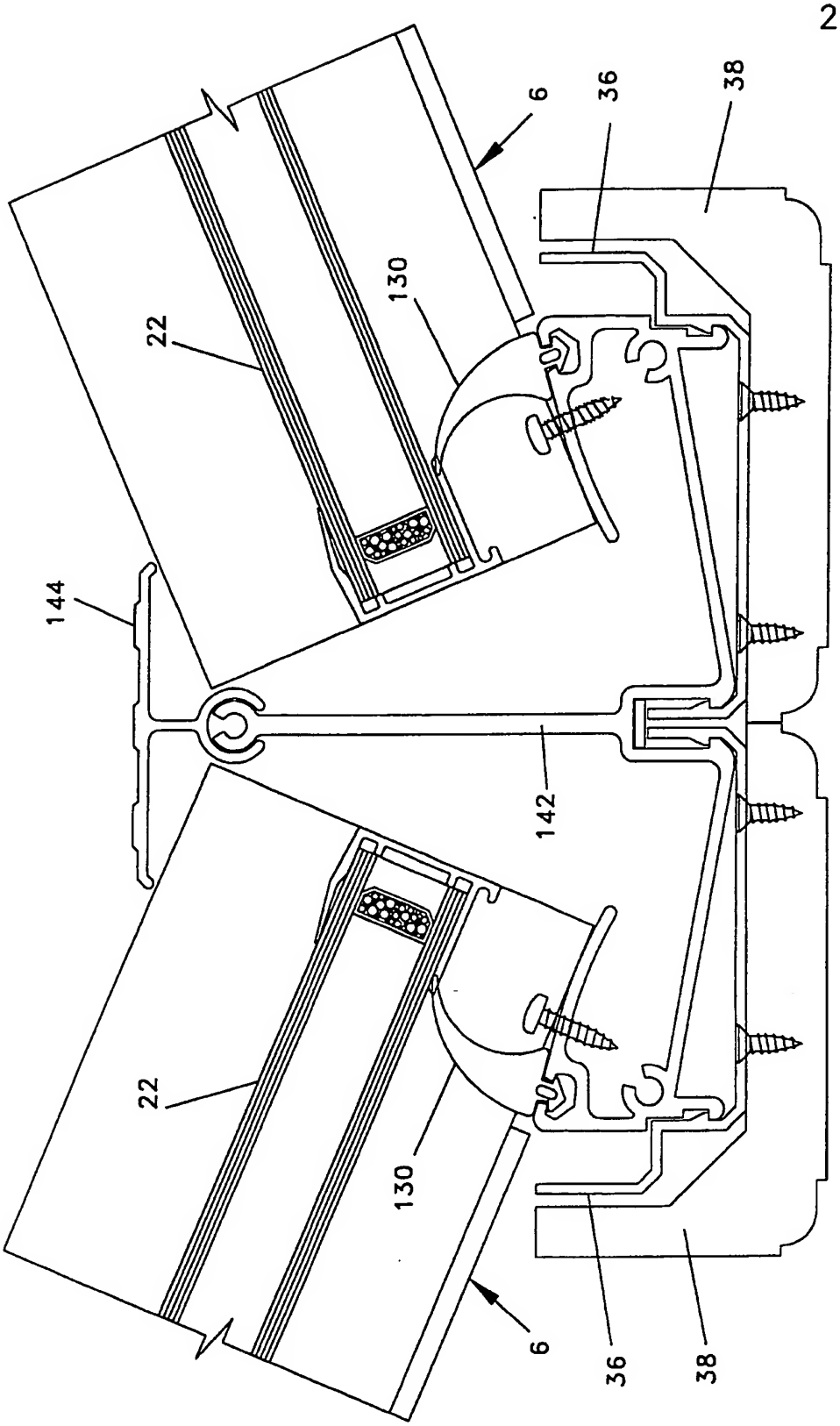

FIG 21

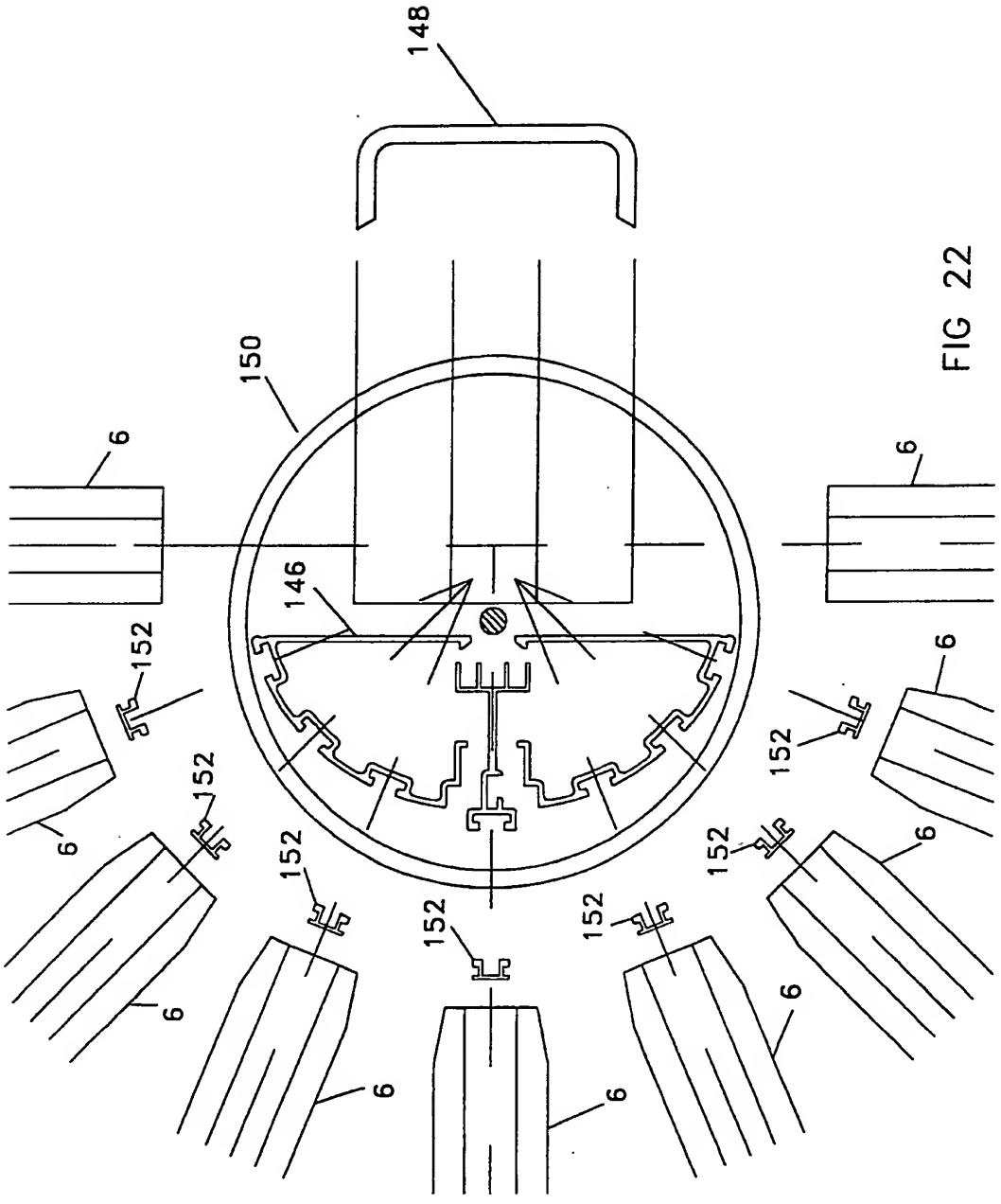

FIG 22

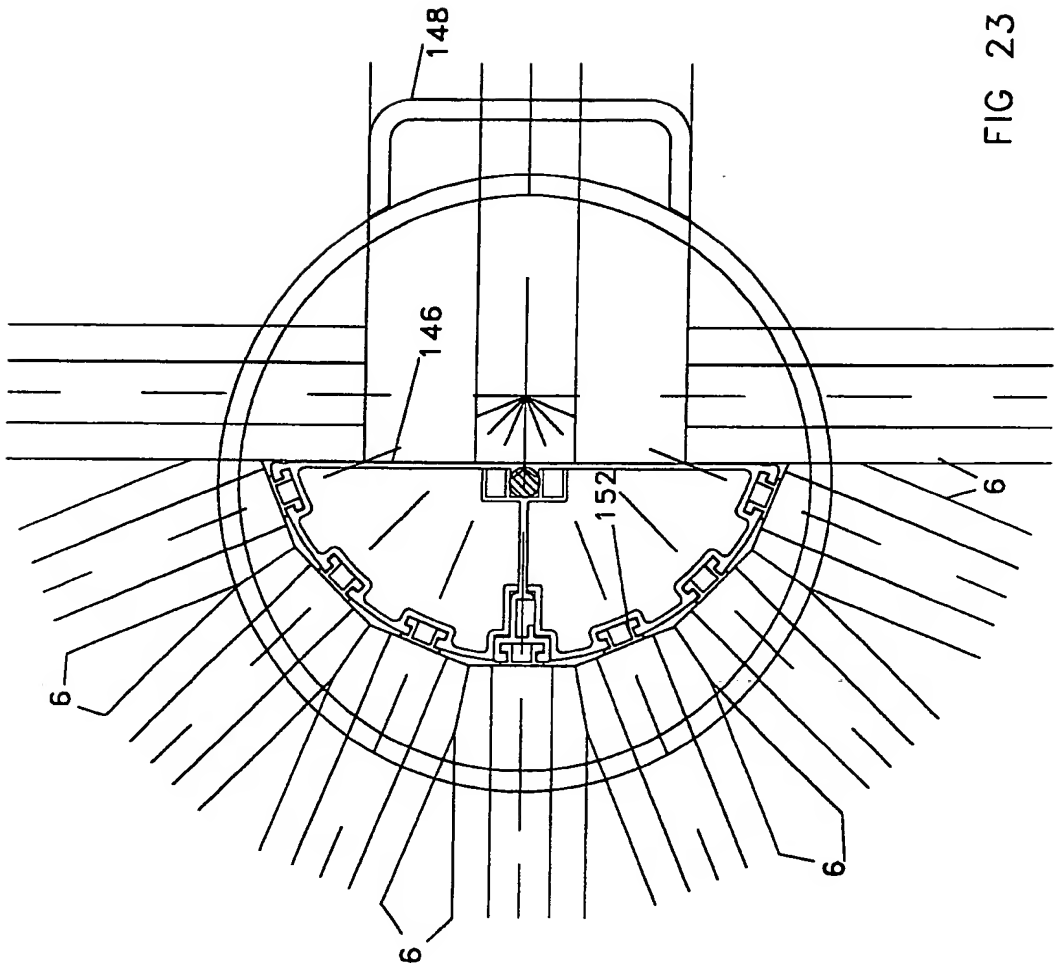

FIG 23

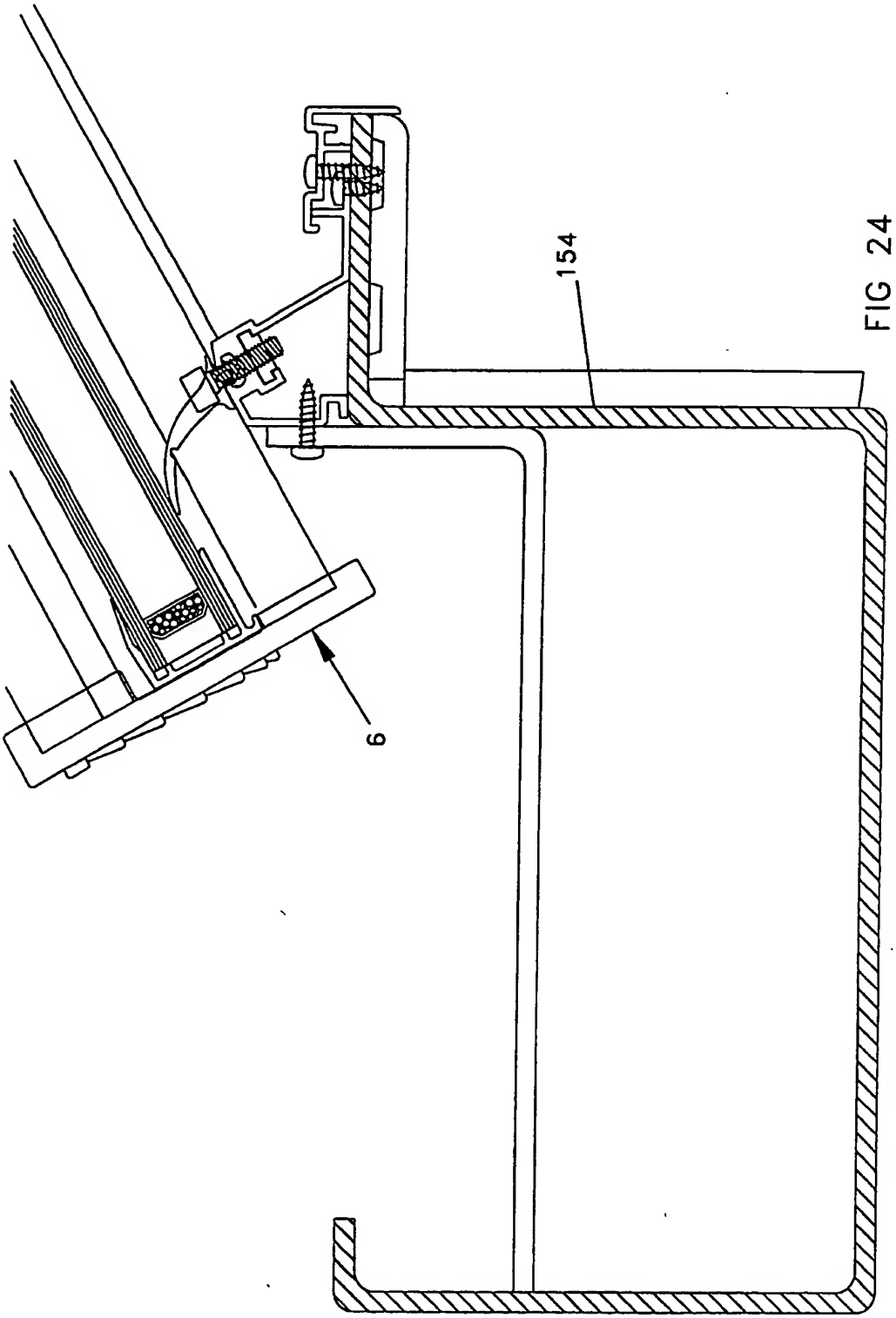

FIG 24

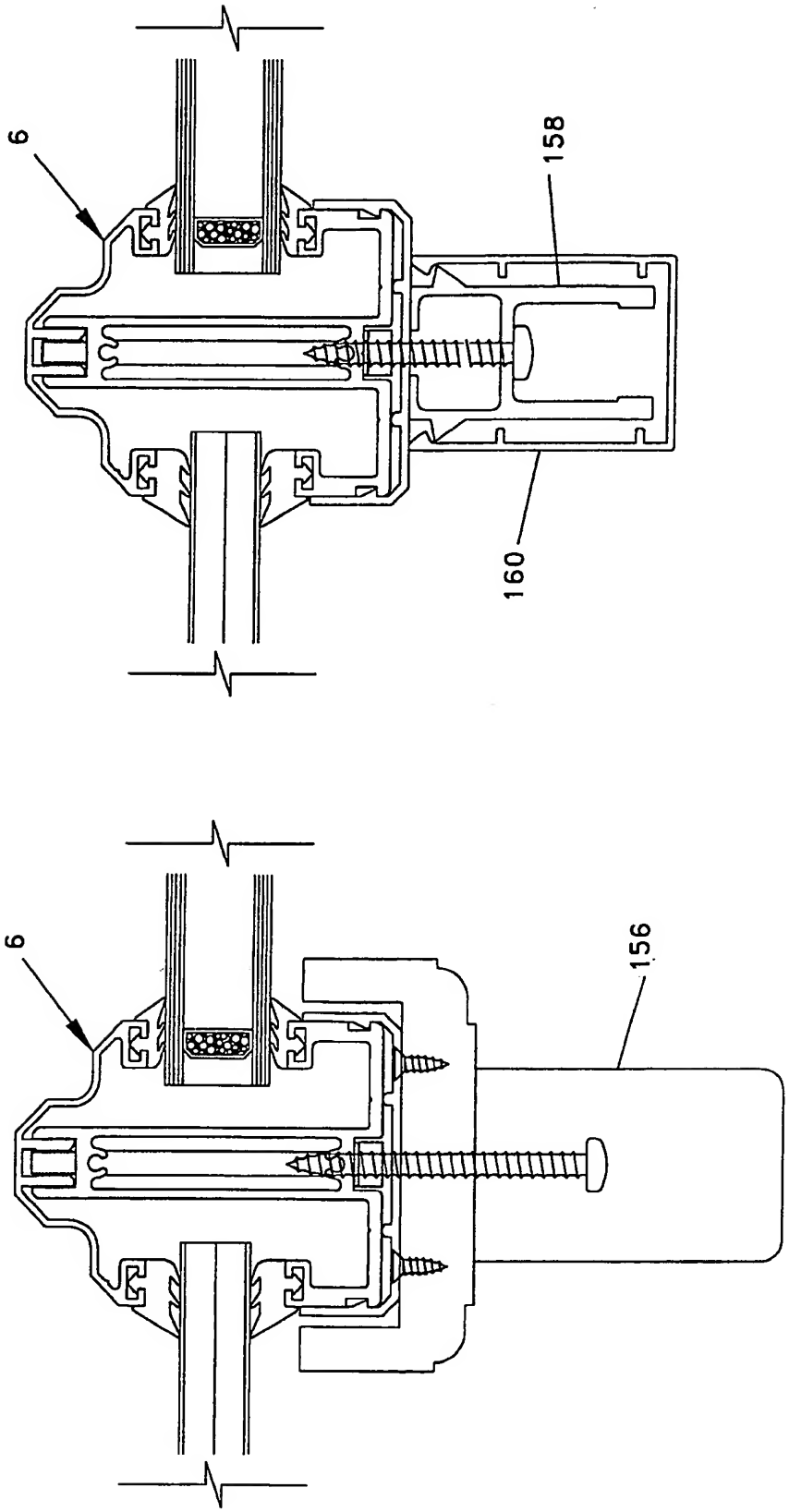

FIG 25

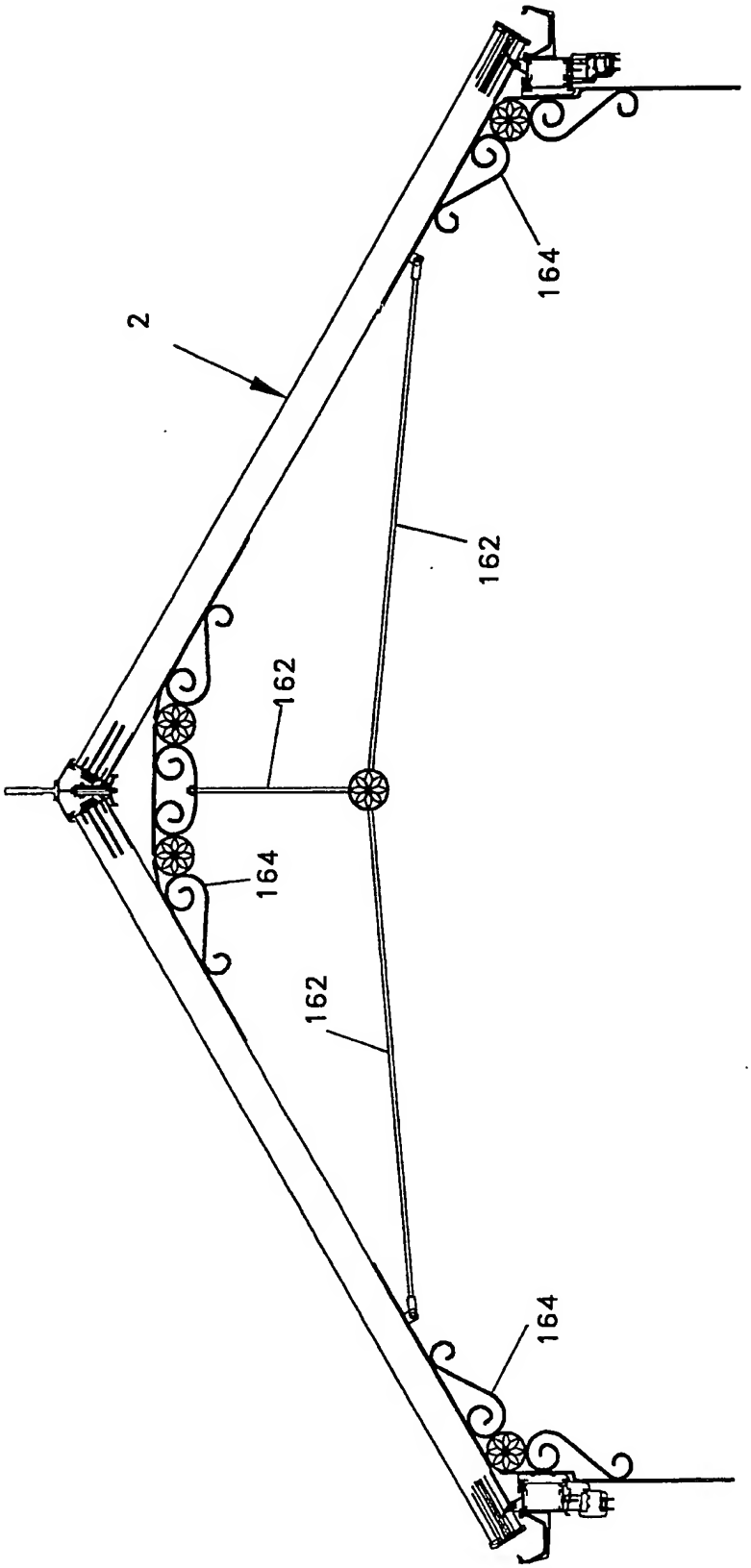

FIG 26

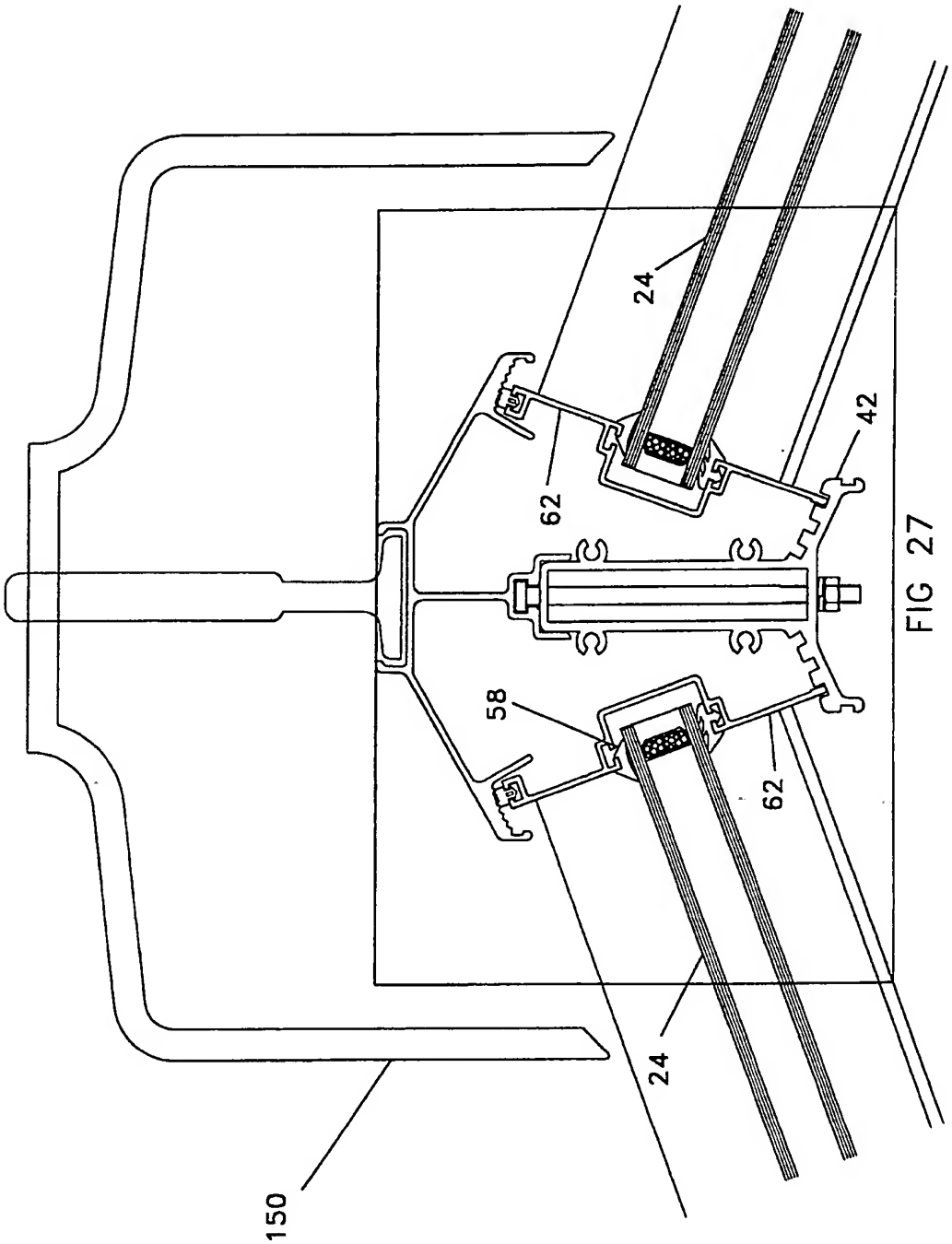

FIG 27

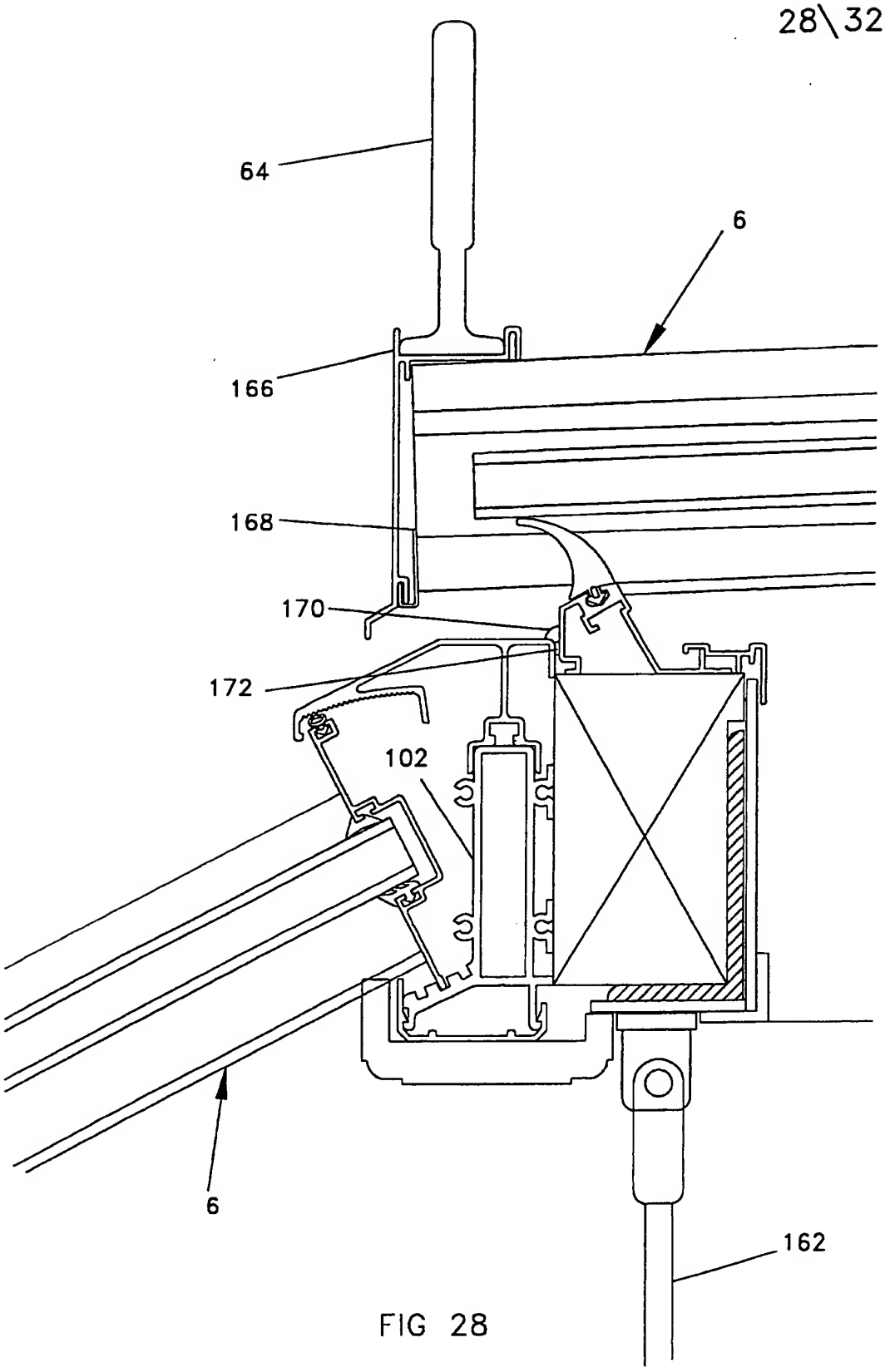

FIG 28

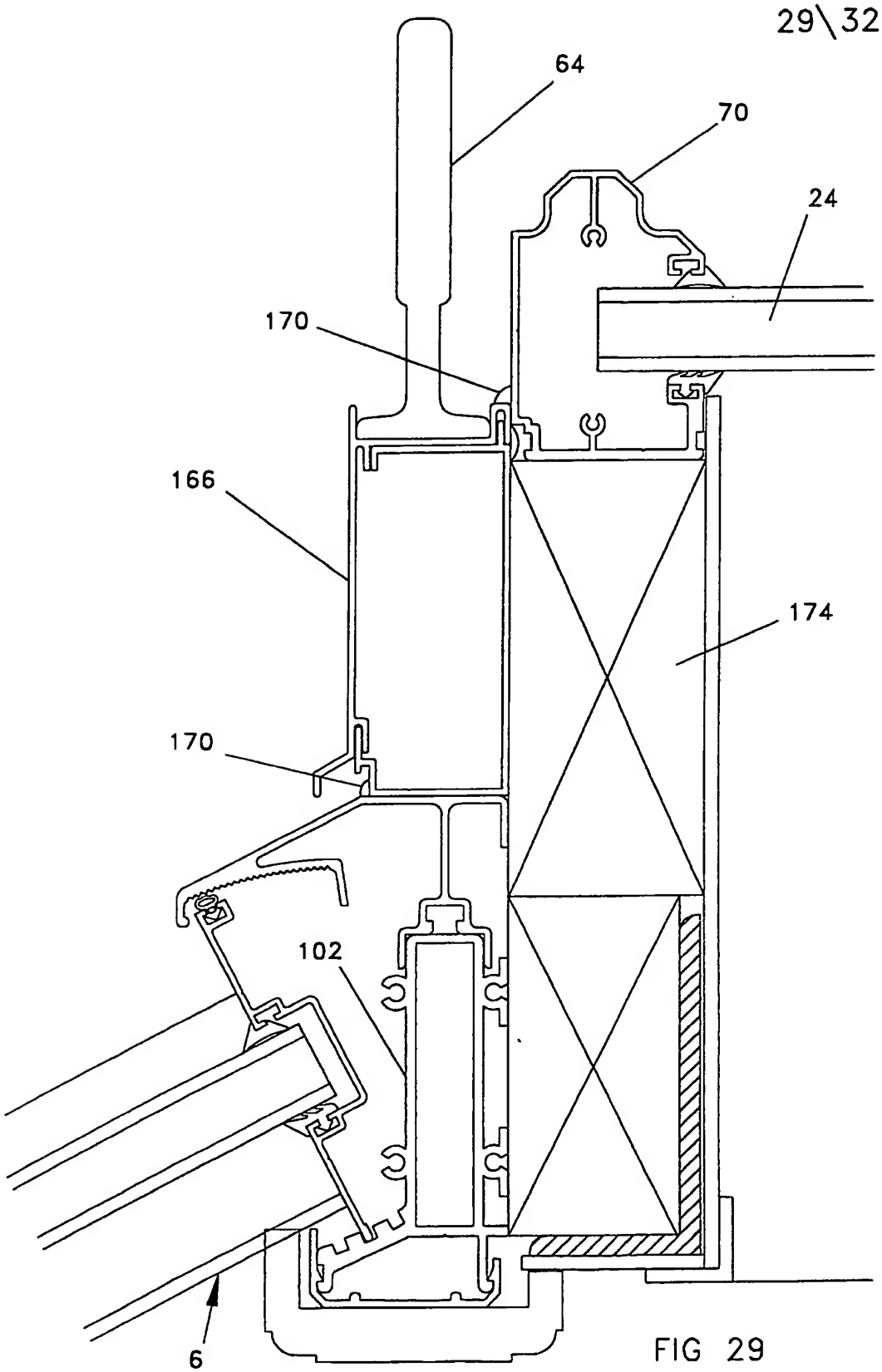

FIG 29

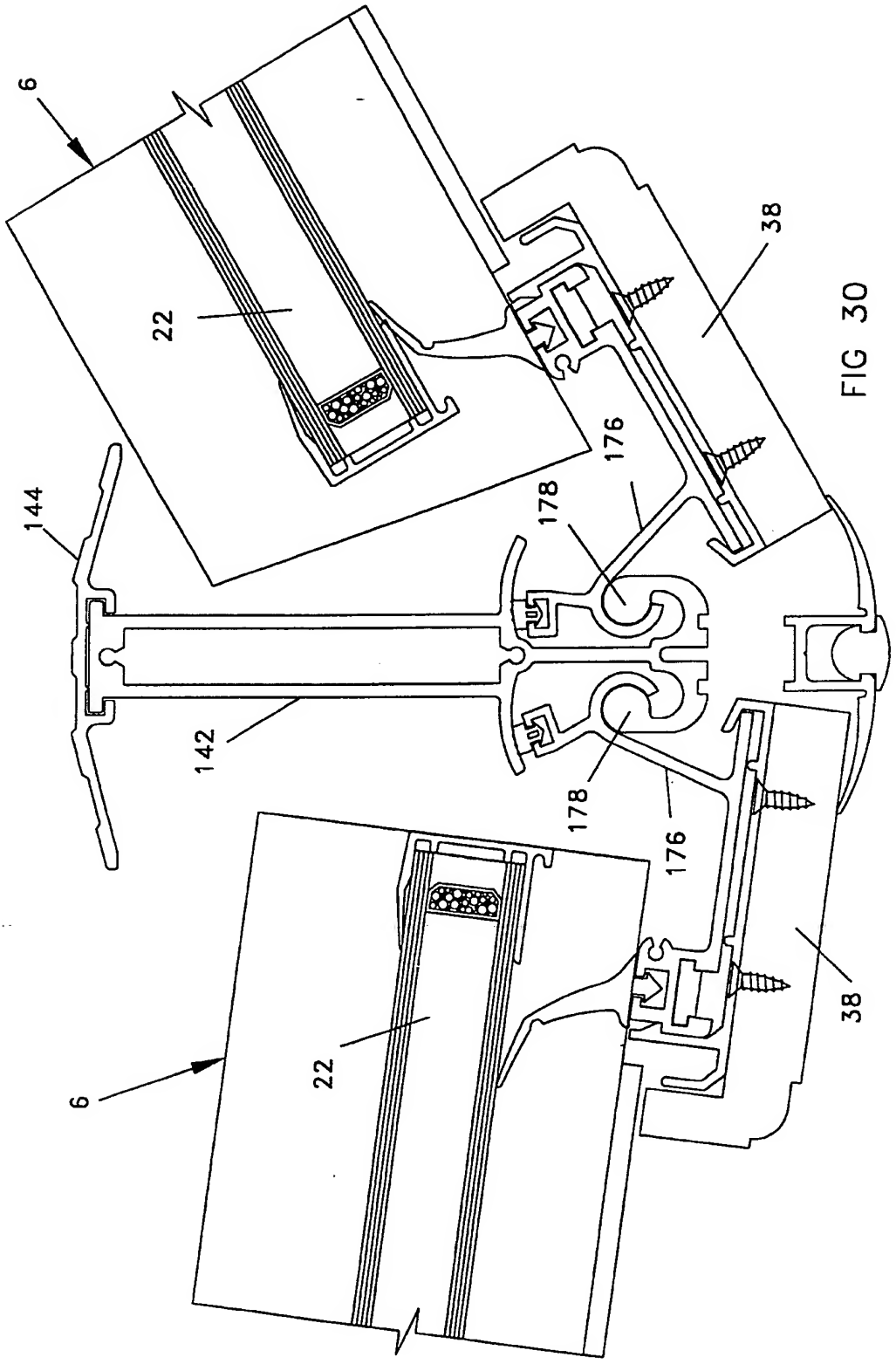

FIG 30

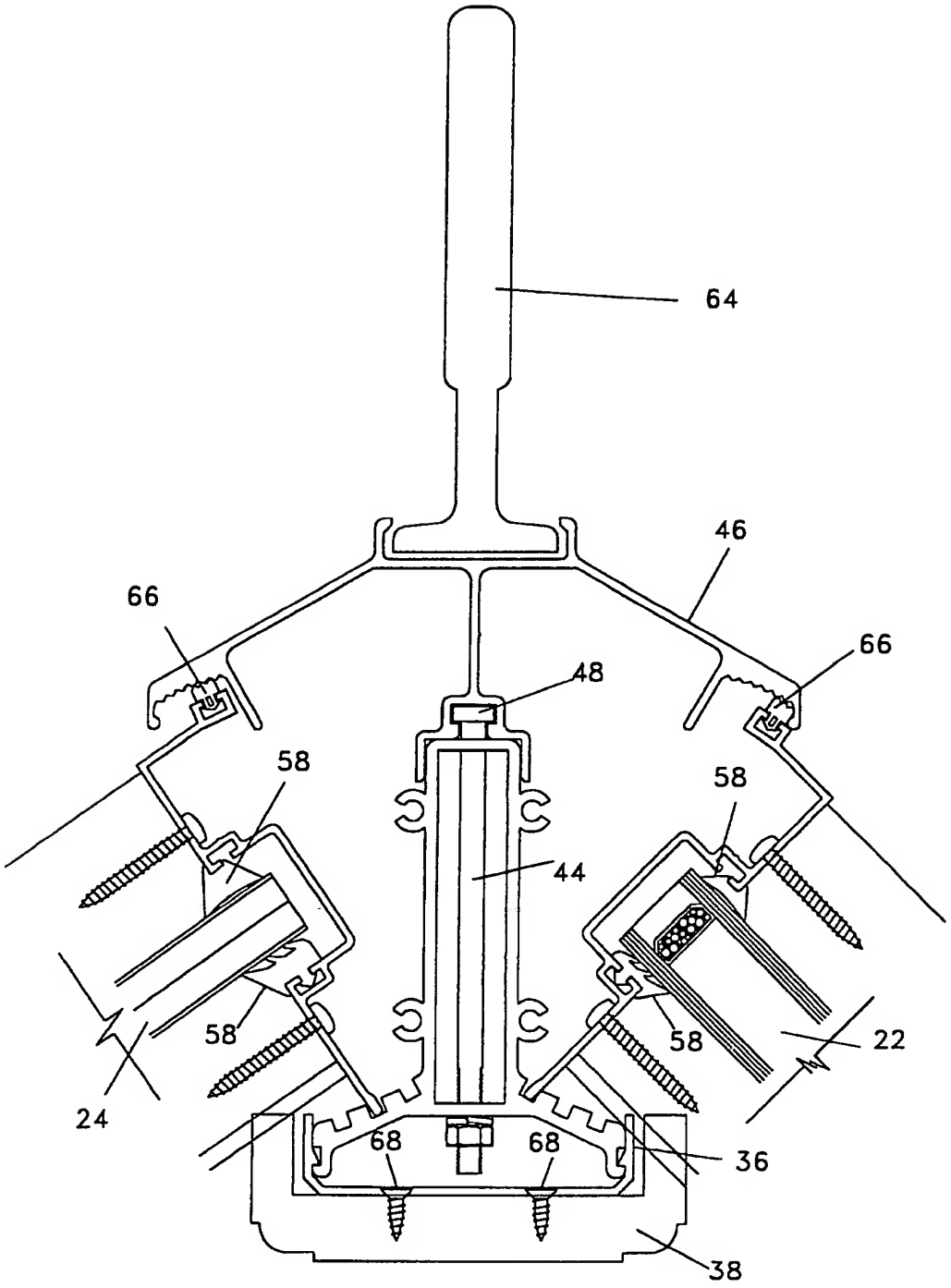

FIG 31

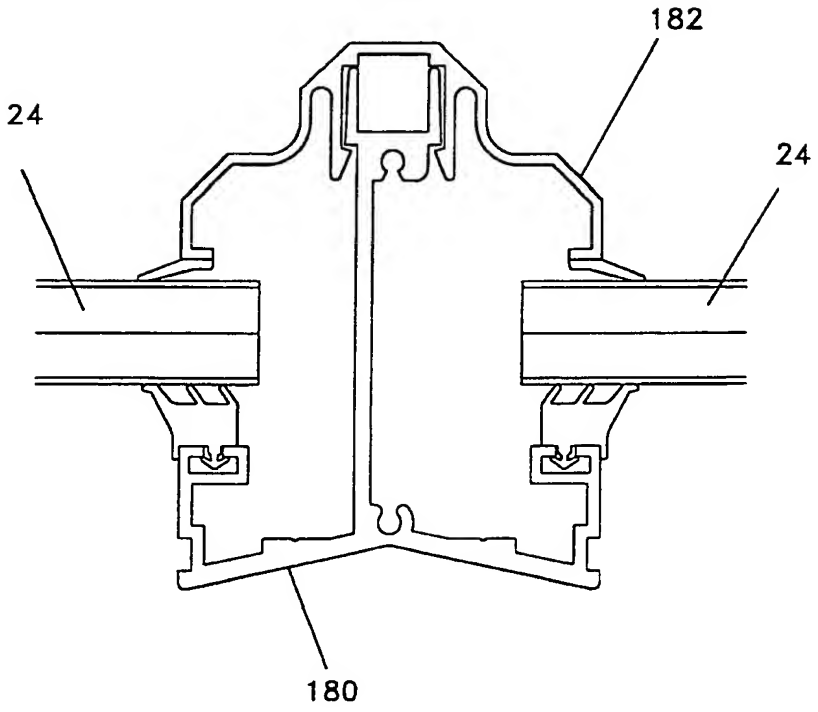

FIG 32

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A CONSERVATORY ROOF

This invention relates to a conservatory roof. This invention also relates to a conservatory when provided with the conservatory roof.

Conservatories are well known and many such known conservatories are manufactured and sold for fitting to existing buildings. The known conservatories which are manufactured and sold for fitting to existing buildings tend to be limited in their design.

It is an aim of the present invention to reduce the above mentioned problem.

Accordingly, the present invention provides a conservatory roof comprising a framework of pre-formed inter-connecting parts, the parts being such that they are connectible in different configurations such that the conservatory roof is able to be constructed in different shapes with required structural strengths, and the framework being made of an aluminium material for providing lightness, strength and weatherability.

The conservatory roof enables a wide variety of conservatories to be produced in a wide variety of designs. Thus, for example, the conservatories may be lean-to conservatories, bell topped conservatories, crown top conservatories, hip end conservatories or gable fronted conservatories. Potential purchasers of

conservatories such for example as home owners are able to be provided with a wide choice of designs. Many of the parts of the framework are produced from hollow section extruded aluminium material which enables good strength over large spans, without the need for reinforcement. Many of the parts of the framework can be factory cut and pre-fabricated, thereby providing easy installation with minimum installation times. Still further, the conservatory roof and conservatories formed with the conservatory roof can be produced to be substantially totally maintenance free.

The conservatory roof may be one in which the framework is constructed and arranged to support sheets of glass or sheets of a plastics material. Glass is much heavier in weight than sheets of plastics material and it is a considerable advantage to be able to offer potential customers a variety of conservatory designs with the further choice of having glass or a plastics material for forming the roof.

The frame work may comprise a ridge beam which enables the conservatory roof to have different pitches. The ridge beam may have a plurality of slots which determine the different pitches, the slots receiving at least one ridge channel member. The

ridge beam may have two sets of slots, the slots then each receiving one of the ridge channel members.

The conservatory roof may be one in which the ridge beam is covered with a ridge capping member, and in which the ridge capping member is held in position by bolts, which are tightened from inside the conservatory roof. This enables the ridge capping member to be secured in position by fitters from inside the conservatory being built and it advantageously avoids the need for fitters to climb on the outside of the conservatory roof as the conservatory is being built and possibly break glass or sheets of plastics material. Where the conservatory roof is provided with plastics material, then this is preferably a polycarbonate plastics material.

The ridge beam may be positioned to run along a central part of the conservatory. Alternatively, the ridge beam may be positioned against a wall in which case it then forms a wall ridge beam.

The frame work may comprise a rafter bar. The rafter bar preferably has a bolt-down cap with secured glass sheeting or plastics sheeting to the rafter bar. Advantageously, the bolt-down cap is secured in position by bolts which have bolt heads positioned inside the conservatory roof, whereby a fitter can

secure the bolt-down cap in position from inside the conservatory roof. This again avoids the necessity for a fitter to climb over the outside of the conservatory roof as the conservatory is being built.

The conservatory roof will usually be such that some of the inter-connecting parts are hollow extrusions. Some of the hollow extrusions may contain polystyrene insulation material in the hollow part of the extrusion.

Depending upon the construction of the conservatory roof, the conservatory roof may include a hip rafter and/or a valley gutter. Where a valley gutter is employed, then the valley gutter may have a pair of pivotable valley gutter wing members.

The conservatory roof may also comprise a D-bracket, a finial base, and a finial base collar.

The conservatory roof may include weathering flipper seals positioned where appropriate.

The conservatory roof may include hardwood or plastics cladding. The plastics cladding will usually be unplasticised polyvinyl chloride cladding but other types of plastics materials may be employed.

The aluminium material from which the framework is made will usually be the aluminium material currently known and used for forming window frames,

patio doors and the like. The aluminium material may be aluminiun or an aluminium alloy.

The conservatory roof may have 24mm thick glazed sealed units. As indicated above, the conservatory roof may have a wide variety of different roof pitches.

The conservatory roof may comprise an eaves beam. Where a valley gutter is employed, then this valley gutter may give strength to the conservatory roof whilst at the same time providing draining facilities.

The conservatory roof may include plastics material cladding which forms a condensation drainage channel. The plastics material cladding is preferably made of polyvinyl chloride.

As indicated above, the present invention also provides a conservatory when provided with the conservatory roof. The conservatory may be of any suitable size, shape and design commensurate with the shape, size and design of the conservatory roof.

Embodiments of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 shows different conservatories but each with a conservatory roof in accordance with the invention;

Figure 2 is an exploded view of a rafter bar used in the conservatory roof, Figure 2 also showing optional hardwood or UPVC plastics material cladding;

Figure 3a shows the rafter bar of Figure 2 assembled and with the hardwood cladding;

Figure 3b shows the assembled rafter bar of Figure 2 but with UPVC cladding;

Figure 4 is an exploded view of a ridge member used in the conservatory roof;

Figure 5 shows the ridge member of Figure 4 but in an assembled condition;

Figure 6 is an exploded view of a wall rafter used in the conservatory roof;

Figure 7 shows the wall rafter of Figure 6 but in an assembled condition;

Figure 8 is an exploded view of a verge member utilising O-rafter and hardwood cladding;

Figure 9 shows the verge member of Figure 8 but in an assembled condition;

Figure 10 is an exploded view of a verge member like that shown in Figure 8 but shows the use of UPVC cladding instead of the hardwood cladding;

Figure 11 shows the verge member of Figure 10 but in an assembled condition;

Figure 12 is an exploded view of a wall ridge beam;

Figure 13 shows the wall ridge beam of Figure 12 but in an assembled condition;

Figure 14 is an exploded view of an eaves beam which is for use with polycarbonate plastics sheeting and a gutter bracket;

Figure 15 shows the eaves beam and associated components of Figure 14 but in an assembled condition;

Figure 16 shows an exploded eaves beam and other components like that shown in Figure 14 but with Figure 16 being for use with glass sheeting;

Figure 17 shows the eaves beam and associated components of Figure 16 but in an assembled condition;

Figure 18 is an exploded view of a hip rafter;

Figure 19 shows the hip rafter of Figure 18 but in an assembled condition;

Figure 20 is an exploded view of a valley gutter;

Figure 21 shows the valley gutter of Figure 20 but in an assembled condition;

Figure 22 is an exploded view of a seven rafter D-bracket with a finial base;

Figure 23 is an assembled view of the components shown in Figure 22;

Figure 24 shows a box gutter of a type which may be connected to the rear of a building;

Figure 25a shows a rafter reinforcing arrangement with hardwood reinforcing;

Figure 25b shows a rafter reinforcing arrangement similar to that shown in Figure 25a but with aluminium reinforcing which is cladded with a plastics cladding material, this being instead of the hardwood reinforcing shown in Figure 25a;

Figure 26 shows a scroll bar with tie rods;

Figure 27 shows a ridge assembly of Figure 4 with a finial base of Figure 22;

Figure 28 shows a front eaves assembly for a conservatory having a crown top;

Figure 29 shows a side beam for a conservatory having a crown top;

Figure 30 shows an alternative type of valley, the valley having a pair of pivotable valley gutter wings;

Figure 31 shows a ridge which is like that shown in Figure 5 but which allows for a greater range of roof pitches; and

Figure 32 shows a roof rafter having an aluminium body portion and a UPVC plastics capping portion.

Referring to Figure 1, there is shown different conservatories 2 each having a conservatory roof 4. The conservatory roof 4 has rafters 6 having a centrally disposed ridge 8, a wall ridge 10, a verge member 12, and eaves 14.

Referring to Figures 2 and 3, there is shown a rafter 6 comprising a rafter member 16 and a cap 18. The rafter member 16 and the cap 18 are both made of aluminium. Bolts 20 are tightenable from inside the conservatory roof 4 in order to tighten the cap 18 against the rafter member 6 and thus sandwich either a glass sheet 22 or a polycarbonate plastics sheet 24 between gasket seals 26 as shown. The bolt 20 is shown screwing into a recess 28 in the cap 18. The recess 28 has serrated or threaded side 30 for receiving the screw threaded portion 32 of the bolt 20. Screws 34 secure either UPVC plastics cladding 36 or hardwood cladding 38 in position on the rafter member 16. Bolts 40 shown in Figure 3a and 3b are for bolting the rafter 6 to an eave section.

Referring to Figures 4 and 5, there is shown a ridge 8 comprising a ridge beam 42 which is bolted by bolts 44 to a ridge capping member 46. The ridge beam 42 and the ridge capping member 46 are made of an aluminium alloy material.

The bolt 44 has a head 48 which fits in a recess 50 in the ridge capping member 46. The illustrated nut 52 and washer 54 can thus be placed over a threaded part 56 of the bolt 44 from inside the conservatory 2 as it is being constructed. Figure 4 shows polycarbonate plastics sheeting 24, whilst

Figure 5 illustrates how glass sheeting 22 can alternatively be employed. It is only necessary to change the size of seals 58.

It will be seen from Figures 4 and 5 that the ridge beam 42 has two sets of slots 60. The slots 60 are able to receive a ridge channel member 62. The capping 46 receives cresting 64. Seals 66 seal the ridge capping member 46 to the ridge channel members 62.

Figure 4 shows a cladding member 36 and how it clips in position. Hardwood cladding 38 may be secured to the member 36 by screws 68 as shown in Figure 5.

Figures 6 and 7 show a wall rafter 6. This comprises an O-rafter 70 which is shown receiving a glass sheet 22 in the form of double glazing. The glass sheet 22 is received between seals 72. The O-rafter 70 can be provided with plastics cladding 36 or hardwood cladding 38. The plastics cladding 36 clips in position by virtue of lugs 74. The hardwood cladding 38 is secured in position by screws 76. The O-rafter 70 is secured by screws 78 to a ground wall timber 80. The ground wall timber 80 is secured to the wall of a building by expansion bolts 82. The side of the ground wall timber 80 is covered with plywood 84.

Referring now to Figures 8 and 9, there is shown an O-rafter 70 of the type shown in Figures 6 and 7 but secured to a gable top cover 88 and the outer frame 90 of a conservatory window. The securing of the various parts together is effected by screws 92 as shown. Figure 9 shows the window 94 with double glazing in the form of glass sheets 22.

Figures 10 and 11 are similar to Figures 8 and 9 but it will be noted that the hardwood 90 of Figures 8 and 9 has now been replaced by UPVC section 96. The hardwood window 94 of Figure 9 is shown in Figure 11 and replaced by UPVC section 98.

Figures 12 and 23 show a wall ridge capping member 100 secured to a wall ridge beam 102 by a bolt 104. The bolt 104 has a head 106 which locates in a recess 108 so that the bolt can be secured in position with a nut 110 and a washer 112 from inside the conservatory 2 as it is being constructed. Figure 12 also shows the use of a ridge channel member 62. The wall ridge beam 102 is secured to a pair of ground wall timbers 114, 116 as shown. Expansion bolts 82 secure the ground wall timber 116 in position. The ground wall timber 114 is secured to the ground wall timber 116 by screws 118. Plywood 84 is used as shown.

Figures 14 and 15 show a rafter 6 of Figure 2 secured in position to an eaves beam 120 forming part of eaves 14. Also shown as part of a window frame 90, a gutter bracket 122 and a gutter 124. End capping 126 and hardwood cladding 38 is employed as shown. Also employed as shown is an eaves weathering section 128 and a flipper sealing gasket 130. In Figure 15 polystyrene insulation 132 is shown in the hollow eaves beam 120. Water running off the conservatory roof 2 is able to follow the water flow path indicated by the arrow 134.

Figures 16 and 17 are similar to Figures 14 and 15 but they show the use of UPVC sections 96, 98 instead of hardwood 90, 94. It will be noticed that the profile used for the eaves beam 120 is able to receive either the hardwood or the UPVC sections.

Figures 18 and 19 show a hip rafter 136 and this hip rafter 136 is not shown in Figure 1. The hip rafter 136 is attached to a pair of hip channel members 138 and to hip rafter capping 140. Bolts 44 attach the hip rafter capping 140 to the hip rafter 136 as shown. Again it will be noticed that tightening of the bolts 44 can be effective from inside the conservatory 2 as it is being constructed.

Referring to Figures 20 and 21, there is shown a valley gutter 142 connected to a capping member 144 and two rafters 6 as shown in Figure 2.

Referring now to Figures 22 and 23, there is shown a D-bracket 146, a finial base collar 148, a finial base 150 and a plurality of D-bracket dove-tail members 152. The members 152 connect the rafter 6 of Figure 2 in position as shown.

Figure 24 shows a box gutter 154 for use connecting to a wall of a house. The box gutter 154 is shown connected to a rafter 6 as shown in Figure 2.

Figure 25a shows a rafter 6 with a hardwood reinforcing member 156. Figure 25b shows the rafter 6 with an aluminium section reinforcing member 158 covered with UPVC cladding 160.

Figure 26 shows the use of scroll tie bars 162. The scrolls 164 forming part of the scroll tie bars 162 give the conservatory 2 a nice look.

Figure 27 shows a finial base 150 and a ridge beam 42 of the type shown in Figure 4.

Figure 29 shows cresting 64, an aluminium facia 166, a facia clip 168, silicone sealant 170 and a rubber seal 172. The arrangement shown in Figure 28 is for a conservatory having a crown top, ie the top does not extend to a sharp apex. Figure 28 also shows

parts of two rafters 6 and part of a scroll tie bar 162.

Figure 29 is similar to Figure 28 and shows the presence of polycarbonate plastics sheet 24. Timber firring 174 is also shown. Figures 28 and 29 both show the presence of a wall ridge beam 102 as shown in Figure 12. Figure 29 also shows an O-rafter 70.

Figure 30 shows a valley gutter 142 with a capping member 144. The valley gutter 142 is provided with a pair of valley gutter wing members 176 which each pivot about a curved member 178. Internal hardwood cladding 38 is provided as shown. The valley arrangement shown in Figure 30 is adjustable as compared with the valley arrangement shown in Figure 20.

Figure 31 shows an alternative arrangement to Figure 5. The arrangement shown in Figure 1 is like Figure 5 except that the ridge channel members 62 are cranked as shown. This gives a greater range of available roof pitches.

Figure 32 shows an alternative type of roof rafter comprising an extruded aluminium rafter member 180 secured to a plastics capping member 182. The capping member 182 is preferably made of UPVC. The use of the plastics capping member 182 provides a lighter structure which is suitable for use with

polycarbonate plastics sheet 24 where conservatories are to be built to a minimum price and are to be used with the polycarbonate plastics sheet 24.

The conservatory roof 4 shown in the drawings constitutes a new aluminium roof system including greatly enhanced strength, and one which gives the ability to have more pre-fabrication of components in a factory, reduced installation time, and a wide variety of universally achievable roof pitches. The conservatory roof may have 24mm glazed sealed units. The entire conservatory roof system is able to be designed to use plastics material cladding, for example polyvinyl chloride, which also acts as a condensation drainage channel.

It is to be appreciated that the embodiments of the invention described above with reference to the accompanying drawings have been given by way of example only and that modifications may be effected.

CLAIMS

1. A conservatory roof comprising a framework of pre-formed inter-connecting parts, the parts being such that they are connectible in different configurations such that the conservatory roof is able to be constructed in different shapes with required structural strengths, and the framework being made of an aluminium material for providing lightness, strength and weatherability.

2. A conservatory roof according to claim 1 in which the framework is constructed and arranged to support sheets of glass or sheets of a plastics material.

3. A conservatory roof according to claim 1 or claim 2 in which the framework comprises a ridge beam which enables the conservatory roof to have different pitches.

4. A conservatory roof according to claim 3 in which the ridge beam has a plurality of slots which determine the different pitches, the slots receiving at least one ridge channel member.

5. A conservatory roof according to claim 4 in which the ridge beam has two sets of slots and in which the slots each receive one of the ridge channel members.

6. A conservatory roof according to any one of claims 3 to 5 in which the ridge beam is covered with a ridge capping member, and in which the ridge capping member is held in position by bolts which are tightenable from inside the conservatory roof.

7. A conservatory roof according to any one of the preceding claims in which the framework comprises a rafter bar.

8. A conservatory roof according to claim 7 in which the rafter bar has a bolt-down cap which secures glass sheeting or plastics sheeting to the rafter bar.

9. A conservatory roof according to claim 8 in which the bolt-down cap is secured in position by bolts which have bolt heads positioned inside the conservatory roof, whereby a fitter can secure the bolt-down cap in position from inside the conservatory roof.

10. A conservatory roof according to any one of the preceding claims in which the inter-connecting parts are hollow extrusions.

11. A conservatory roof according to claim 10 in which some of the hollow extrusions contain polystyrene insulation material in hollow parts of the extrusions.

12. A conservatory roof according to any one of the preceding claims and including a hip rafter.

13. A conservatory roof according to any one of the preceding claims and including a valley gutter.

14. A conservatory roof according to claim 13 in which the valley gutter has a pair of pivotable valley gutter wing members.

15. A conservatory roof according to any one of the preceding claims and including a D-bracket, a finial base, and a finial base collar.

16. A conservatory roof according to any one of the preceding claims and including weathering flipper seals.

17. A conservatory roof according to any one of the preceding claims and including hardwood or plastics cladding.

18. A conservatory roof according to claim 17 in which the plastics cladding is UPVC plastics cladding.

19. A conservatory roof according to claim 17 or claim 18 in which the plastics cladding also provides a condensation drainage channel.

20. A conservatory roof substantially as herein described with reference to the accompanying drawings.

21. A conservatory having a conservatory roof according to any one of the preceding claims.

Patents Act 1977
E niner's report to the Comptroller under Section 17
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Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant following a search in respect of Claims :-
1-21

Categories of documents

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Category	Identity of document and relevant passages		Relevant to claim(s)
X, E	GB 2275958 A	(ULTRAFRAME) note page 3 lines 19-21	1, 2, 7, 8
X, E	GB 2273114 A	(DURAFLEX)	1, 3
X	GB 2268948 A	(SHELPLEY WINDOW SYSTEMS)	1
X	GB 2259926 A	(SCHOLES)	1-3
X	GB 2224762 A	(ANGLIAN WINDOWS)	1, 12
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